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KNOWLEDGE OF THE LIFE SCIENCES AS A BASIS FOR PRACTICE: SOME
PROBLEMS IN NURSE EDUCATION

A THESIS

submitted by

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ABSTRACT

This study focuses upon curricular provision for the translation of knowledge of the life sciences into informed nursing practice. Part I reviews the literature and explores the role of the life sciences in nurse education. In particular, the potential of a 'bionursing' link between the life sciences and the development of professional competence in clinical practice is discussed.

Part II describes and develops the rationale and methodology for the empirical study. Part III reports the empirical study, discusses specific methodological procedures and the findings of surveys of the opinions of learners and of nurse tutor students. The views of course directors in institutions preparing nurse tutors in England and Wales on the role of the life sciences in nursing are reported.

Part IV summarises the findings. Implications for nurse education, practice and for further research are discussed.

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*All references in this thesis to the General Nursing Council for England and Wales should be read in the light of the statutory functions of the United Kingdom Central Council for Nursing, Midwifery & Health Visiting (UKCC) and the National Boards for England and Wales (ENB & WNB).

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CHAPTER ONE

CHAPTER I

THE LIFE SCIENCES IN NURSING EDUCATION

The studies reported in this thesis focus on aspects of the relationship between the biological sciences subjects that form the foundation to nursing (anatomy, physiology, microbiology and pharmacology) and their application to its practice.

A number of recent studies have focused attention on learners and their training (Fretwell 1978; Gott 1979; Ogier 1980), but little attention appears to have been paid to the central problem of a knowledge base derived from the life sciences. Yet it could be argued that, with the advances in modern medical practice and the complexities of the health care needs of society in general, the life sciences constitute particularly important contributions to the development of nursing competence and the physical safety of patients.

Although some sociologists have classified nursing as a semi-profession (Leggatt 1975; Baly 1982), recent years have seen the professional standing of nursing under constant review. The characteristics of a profession were first enumerated by Carr-Saunders (1933) and in a discussion of these characteristics, Hall (1973) noted three important criteria for the professionalisation of nursing. These are:

- a) Possession of a unique body of knowledge which, in her words, "a profession seeks to extend in order to improve its practice."

- b) Education of its practitioners.
- c) Setting of standards of practice within the profession.

State registration, under the control of the GNC, was established in 1919 and is concerned with the maintenance of standards. However, the development of appropriate attitudes and professional ethics are, as in medical education, partly taught but mainly acquired in practice during training. The aim of this approach, it could be argued, is to ensure meticulous attention to detail in the carrying out of nursing tasks of all kinds, and if Bendall (1977) is correct in asserting that nursing has 'virtually no power, status or role outside medicine', no more need be required of the trained nurse. Others, such as Cornellijs (1977) have argued, however, that a nurse has responsibility and hence accountability, for which the education and training could prepare the individual practitioner. This is a wider definition of professional education which may confer a measure of autonomy on the qualified nurse's action in areas relating to patient care.

The assumption appears to be that, the area in which the nurse is acknowledged as the 'expert' and for which she is accountable, need to be based upon sound and appropriate knowledge derived in large measure from the underlying life and behavioural sciences. This assumption appears to lie behind the majority of nurse education programmes. At a time when there is a belief that changes are necessary in nursing

education (Briggs 1972; UKCC 1982; Rcn 1984), it is important that attempts be made to examine the knowledge base of nursing practice and its implications for the education, not only of learners, but of their teachers as well.

There is now a considerable body of knowledge arising from various studies undertaken by nurses and others on nursing education and practice. MacGuire (1969) summarised the early studies, many of which were concerned with nurse learners, in terms of selection criteria, educational attainments before entry and other learner variables. The Department of Health and Social Security and the Royal College of Nursing (DHSS/RCN) Study of Nursing Care Research Projects (Inman 1975) shifted the emphasis of recent research into clinical areas, making patient care the cornerstone of the investigations. The focus on patient care may be a reflection of a growing concern for more attention in nurse education to the nurse's role and the relation of this role to the curriculum input (Platt 1964; Briggs 1972).

A review of the literature on nursing research in the UK reveals a considerable number of studies based on behavioural sciences foundation (Inman 1975; Clark & Hockey 1979; Hayward & Lelean 1982; Cormack 1984). However, there is a dearth of research into the role of the life sciences in nursing education in the UK. Two important studies in this field are those by Nolan (1973) and Wilson (1975). Wilson's study suggests that the life sciences theory which underpins nursing practice is unstructured and ill-defined. This lack

of definition in the syllabus for general and specialised nursing courses has been noted by nurse educators who have increasingly expressed concern about it (Cox 1984). A particularly important aspect of Wilson's study is the evidence that the application of theoretical knowledge of the life sciences is 'unstructured and appears to be haphazard,'.

Yet, the application of the knowledge acquired through lectures occurs in clinical situations in the performance of the techniques and skills that comprise nursing care. While many tasks are routine matters, and sometimes appear to represent no more than the carrying-out of doctors' instructions, it may be argued that they are most likely to be performed properly if nurses understand exactly the reasons for their actions in terms of patient well-being and comfort. More complex tasks, and those in which a measure of flexibility has to be applied in individual cases and in emergency measures, are crucially dependent upon this sort of clear understanding of the reasons for action. Thus, whether the activities involved in the performance of any aspect of nursing care are merely routine, or prescribed by a medical practitioner, or initiated by a qualified nurse dealing with an individual situation, it would seem to be in the best interests of patient care that the reasons for the actions (based on the appropriate use of knowledge derived from the life sciences) are fully understood by both qualified nurses and learners. This argument implies a commitment to a 'nursing model' of nurse education, which requires that nursing care is based on a sound foundation of knowledge

derived from the biological, behavioural and social sciences.

Of central importance, then, is recognition of the failure to develop a system of life sciences input into nursing education and practice, which does not depend on a 'medical model', a failure deplored by nurse theorists (Riehl and Roy 1980; Roper et al, 1980) as well as medical practitioners. For instance, McCarthy (1972) described the prevailing system of nurse education as 'ineffective, inefficient and, in some ways, harmful to the progress of nursing.'

The literature suggests that there is growing concern (1) for changes in nursing education, especially in relation to the knowledge base; (2) for a knowledge base which has, at its heart, the concept of nursing 'care' as a complement to medical care; (3) for a nursing model for nurse education, as distinct from the usual medically-orientated knowledge input, and (4) for a correspondingly more significant role for nurse tutors. The implications for nursing courses at all levels, from learners to nurse tutors, could be considerable and deserve to be examined objectively in the light of the changing patterns of education generally and health care particularly.

This study started from a consideration of the need to develop a life sciences nursing model as a basis for the nursing curriculum; more specifically, from a concern, within that context, for strengthening the life sciences base in nursing curricula. The term 'bionursing' was coined to

describe what is considered to be a distinctive life sciences knowledge-base and its application in nursing practice which reflects the nursing model of patient care. It is argued that the application of biological principles to other disciplines acknowledges this by the prefix 'bio' as is the case in medicine where a 'biomedical' term refers specifically to the uses of biological principles in medical education.

Within this context, the study attempts to identify a 'bionursing' approach to the life sciences curriculum in nurse education, and to explore the perceptions of learners, nurse tutor students and directors of nurse tutor courses with regard to:

1. the role of the life sciences in the performance of nursing tasks.
2. their preparation for performing, and for teaching about, nursing care as related to the life sciences and their application to its practice.
3. the usefulness of a 'bionursing' model in nurse education

The theoretical framework for the study is developed and the aims of the empirical study specified in Chapter V, following the literature review (Chapters II - IV).

CHAPTER TWO

CHAPTER OUTLINE

PART I

LITERATURE REVIEW

CHAPTER II

Literature review: role of the life sciences in nursing
education

2.1 The life sciences in nursing

2.2 Teaching the life sciences: medical and nursing models

2.3 Application of the life sciences in nursing practice

2.4 Summary

CHAPTER II

THE ROLE OF THE LIFE SCIENCES IN NURSING EDUCATION

2.1 The life sciences in nursing

In this study, the life sciences of concern are anatomy, physiology, microbiology and pharmacology. It is their contributions to the nursing curriculum at different levels of nursing education that is at the centre of this work. An examination of courses at basic and post-basic levels shows that the life sciences represent a substantial part of the knowledge required for informed nursing practice. A nurse requires knowledge and understanding of these sciences in order (i) to carry out medically prescribed treatment (ii) to perform nursing tasks, (iii) to make informed reports based upon informed observations, (iv) to provide an informed basis for communication with patients, and (v) once she qualified, to make informed decisions in specific situations. Decisions and action in nursing practice, whether routine or emergency, need to be related to the individual situation of each patient at a given time. This is the essence of individualised nursing care (Hargreaves 1985).

It could be argued that one of the important contributions of life science education in nursing is the development of professional responsibility based on an understanding of the reasons for nursing intervention whether prescribed by a

doctor or initiated (where appropriate and necessary) by the qualified nurse. This understanding is crucial for professional competence, and needs to be developed during training, along with the skills and techniques (the tasks) which it informs. This development, it is argued in this thesis, in turn depends upon the quality of both the knowledge input in formal lectures, and the clinical experience, which links theory with practice.

The syllabus for basic general nurse education (GNC 1970) prescribes a broad guide to the study of the human individual and, under the relevant life sciences subjects, considers the general structure of the body in relation to its functions (p 7). This part of the syllabus deals essentially with the application of anatomy and physiology to nursing while other sections are based on knowledge required from microbiology (tests and investigations, p 5) and pharmacology (administration and storage of drugs, p 5).

The syllabus proceeds from what appears to be an implicit assumption that the important task of providing a link between theory and practice occurs during clinical teaching on the wards and other departments. In fact, the written final examinations for both state registration and enrolment test both kinds of knowledge. It is therefore significant to note the marked contrast between results on questions which depend upon rote memorisation, and those requiring understanding of the reasons for actions taken (Wilson 1975).

2.2 Teaching the life sciences: medical and nursing models

In the education and training of its recruits, nursing has relied rather heavily on medicine for the appropriate introduction to the study of the life sciences. This is evident from the wide range of textbooks for nurses written by medical staff either as individuals or in collaboration with nurses. Over the years, the medical contribution to the education of nurses has been substantial and the post-basic clinical courses, with their reliance on medical expertise, increased the extent of the medical involvement in nursing education. The Joint Board of Clinical Nursing Studies (JBCNS), for example, began its life under the chairmanship of a medical expert. However, as Abel-Smith (1960) noted, the gradual professionalisation of nursing has also led to a questioning of this long-established dependency on medicine. Yet in spite of such questioning, the medical input in the life sciences has remained strongly entrenched in basic and post-basic nursing education.

When the GNC introduced a new syllabus for general training (1969), it recommended continued provision of fees for medical lectures to learners which emphasised the importance of this contribution. It is perhaps significant to note that no similar arrangements for the payment of fees were made by the GNC for specialist nurses who lecture to learners. The Council did not envisage a reduction in the medical contribution to basic nursing education because, as stated in its Memorandum (GNC 1969):

It is unlikely that with the increasing integration of subject-matter, formal lectures from medical staff could be curtailed which only serves to make her less able to learn what she needs to know."
(p 2)

Although the majority of these lecturers were in specialist medical areas e.g. paediatrics, surgery, medicine, gynaecology and other subjects in which the medical staff are the acknowledged experts, they nevertheless represented major sources of the input of the life sciences in the nursing syllabus. In order to strengthen the degree of medical involvement in nursing education, the Council put this contribution in a wider context because:

The Council believes it would be helpful for medical specialist staff to lecture locally to the tutors and trained staff and is examining such an arrangement. (GNC 1969, p 2)

The central point in all these consideration would seem to be the acceptance of the fact that a medical contribution is essential in the nursing curriculum because of the need to develop a knowledge base in the life sciences. However, during the last decade there has been a steady shift towards a nursing orientation in the way that the life sciences are taught and learnt. For instance, examination of the pages of the two professional journals in the United Kingdom (Nursing Mirror and Nursing Times) in the past decade reveals a preponderance of nursing contributors compared with the previous decade and earlier when medical writers constituted the major contributors. It might be that the recent emphasis on the identification of nursing problems rather than medical diagnosis per se as the basis for nursing actions has

contributed to this apparent shift (Akinsanya and Hayward 1980). Indeed, Hume (1981) in an examination of the nature of this shift notes that:

Tutors are well able to lecture on many subjects hitherto thought of as the medical preserve.

But this ability, in the absence of an adequate preparation of tutors for the function, could pose serious teaching problems particularly in the area of linking the life sciences and nursing for professional competence and skilful delivery of care.

Nor was the medical profession itself at one in the approach to the teaching of nurses. McCarthy (1972) saw the participation of medical teachers in nurse education as sometimes unhelpful and deplored the over-reliance on the medical profession for the teaching of nurses.

McCarthy suggests that doctors, in general, use inappropriate methods and teach inappropriate materials when teaching nurses and argues:

For a large proportion of the nurse learners, the encounter is, at best, confusing in that the nurse is overwhelmed with irrelevant materials

Such an attitude from a surgeon involved in the teaching of nurses is important but raises the question: What do nurses need to know in the life sciences for safe professional practice? While McCarthy's views could be challenged on the ground of its apparent generalisation, and it could be argued that it is inaccurate in parts in that medical staff normally cover subjects in which they are the acknowledged experts. The causation, nature and treatment of diseases are arguably

the province of the medically trained. But even these depend on a knowledge derived from the life sciences which are academic disciplines in their own rights. As will be seen later in Chapter IV, at the time when nurse tutors were being required to assume responsibility for the teaching of the life sciences, changes in their own method of preparation were already undermining their ability to do so competently. This was especially important because the introduction of one-year courses for nurse tutors lessened the input of the life sciences without a corresponding increase in their clinical involvement in order to demonstrate the uses of the sciences in practical nursing. So, while the profession sought to expand its educational influence in the life sciences, it managed simultaneously to create conditions in teacher preparation that would seem to be counter-productive through the absence of a structured approach to the clinical teaching which involved the use of the life sciences in practice.

2.3 Application of the life sciences in nursing practice

The knowledge input in the life sciences, it could be argued, is essential to an understanding of practice because it provides the reasons for actions and so determines appropriate actions in individual circumstances.

The relationship between theory and practice in nursing has been the subject of considerable discussion over the years. McFarlane (1977) argues that:

The registered nurse must practice from a theoretical basis adequate for her function if the care she gives is to be safe and of good quality.

It could be argued, therefore, that a practice discipline such as nursing needs to strive towards some form of a knowledge based approach in order to consider its practice safe and of good quality. The paucity of empirical literature in nursing is thus a constraint but the 'Study of Nursing Care Project' sponsored by the DHSS/RCN (1967-1975) as noted in Chapter I, represented a major contribution to the literature in the UK. Each of the studies in the series examined clinical nursing problems using theories derived from the behavioural and biological sciences. In one study, described by Inman (1975) as "robust in the experimental design" (Hayward 1973) notes:

Professional judgements still play a major role in the determination of nursing standards, and they may play an important part in defining target areas. In the final analysis, however, they lack direct indices of quality in what is perhaps the ultimate criterion, namely patient welfare.

The literature lends support to this view. For instance, Bendall (1975) in a study of student nurses' learning and application of theory to practice found no objective evidence of a relationship between education and a "satisfactory standard of nursing ability."

In an earlier study by Dodd (1973) the researcher found no positive relationship between level of observed performance and the level of knowledge of principles on which the performance was based. A recent study by Gott (1979) examined

introductory course preparation for learners and the relationship between practical instructions in the school and practical activities on the ward. She set out to test the hypothesis that "training schools do not prepare student nurses adequately for work experience." Gott's study is worth examining in some detail in view of the relevance to the present study. Her sample consisted of nurse teachers (n=4), ward sisters (n=6), student nurses (n=8) and patients (n=10). She carried out non-participant observations in the school and clinical areas and later interviewed the participants. The author found no direct relationship between the theoretical approach in the school and the practical application of knowledge in the wards. It is probable that the major difficulty in this often repeated discrepancy between theory and practice in nursing is the question as to whether it is better to integrate theory and practice in nursing or, as Abdel-Al (1974) argued, to relate rather than integrate them. Her own study examined the relationship between nursing education and the theoretical foundation of clinical practice. It involved learners in general training whose ability to relate or integrate theory and practice in nursing was studied by the researcher.

Essentially, Abdel-Al suggests that relating, because it brings two or more ideas together without submerging them, enables the individual to both use concepts independently as well as see their relatedness to one another. On the other hand, integrating fuses ideas and each loses its independent existence by virtue of that fusion. She argues, therefore,

that nursing theory and practice must be related rather than integrated thus enabling nursing practice to retain its own distinctive contribution. From the point of view of the present study, it could be argued that by relating theories derived from the life sciences to nursing through the concept of 'bionursing', the distinctive nursing aspect is retained without losing the overall benefits of the scientific rigour which these sciences contribute to the study of nursing. Certainly, Abdel-Al's (1974) view that relating theory to practice was a more effective educational strategy than the quest for integration is worth considering in the development of curriculum for nurse education.

However, it must be noted that this is in direct contrast to the views generally held in nursing and the study by Owen (1977) suggests that integrating theory and practice provided a better approach to the education of the nurse. Nevertheless, both strategies could find their use in clinical teaching where the reality of practice needs to be informed by the theoretical underpinning. For example, the GNC (1969) saw clinical teaching by medical staff as a means of introducing learners to theoretical materials. Although medical ward rounds represent important areas for such clinical teaching of learners, the major contributors to their clinical training are the ward sisters and clinical teachers. In two ward-based studies on communication and clinical experiences of learners neither Lelean (1973) nor Roper (1976) reported demonstrable clinical teaching by medical staff.

It seems clear that few assumptions can be made about the contribution of doctors and ward sisters to the linking of theory and practice in a formal manner. It is perhaps because formal arrangements do not exist in the wards for regular clinical teaching by medical staff that the role of the clinical teacher is considered important in nurse education (Mathieson 1974). Typically, medical staff ward rounds are concerned with the review of patients' conditions and progress, without any overt attempt to teach the learners. Although the introduction of the clinical teacher grade in 1969 served the dual purpose of (1) ensuring clinical teaching and (2) reducing the pressure on ward sisters, this was not necessarily the complete solution to the problems of theory/practice linkage in nursing. In the first place, discontinuation of the earlier system of clinical supervision of students by nurse tutors and ward sisters meant that theory and the crucially important link with practice was in the hands of what Bendall (1976) described as 'non-practising-theoreticians' - the nurse tutors. Thus the teaching of ideal theories in schools, as seen by Bendall, could well be the cause of the apparent polarisation of theory and practice in nurse education. This issue will be taken up in Chapter V.

2.4 Summary

Chapters I and II have focused on the role and relation of the life sciences in the nursing curriculum and have argued that it is important for the professional competence of

nurses. This chapter indicates a developing consensus in the literature for a nursing curriculum in which theory and practice are integrated or related in clinical teaching. This has important implications for nursing practice i.e. in concrete situations. In particular, the appropriate preparation of nurse tutors for clinical teaching that will make clear to learners the reasons for their actions in the performance of tasks i.e. preparation for a move towards a formal link between theory and practice in nurse education. In some ways, it could be argued that nursing, though closely allied to medicine, has not learnt from the latter's approach to the learning and use of knowledge derived from the life sciences through its 'biomedical' theoretical link. In an important sense, however, the part of the difficulty for nursing is the total absence of the learning tools in these sciences - e.g. cadavers are not dissected in the teaching and learning of anatomy and experimental approaches are not adopted in the learning of physiology, microbiology and pharmacology. A shift in the knowledge base of nursing from a 'biomedical' approach may well provide the change in emphasis required, taking into account the absence of the tools noted above. As Lynaugh and Bates (1973) pointed out, medicine and nursing already have two distinct languages which express their respective professional orientation. And for Cox (1982), the future direction for nursing education depends, to a large extent, on the development of appropriate curricula to prepare learners for future health care demands. These issues will be taken up in Chapters III and V.

CHAPTER THREE

CHAPTER OUTLINE

PART I

CHAPTER III

LITERATURE REVIEW: THE EDUCATION AND SUPPLY OF NURSES AND THE
LIFE SCIENCES

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3.2 The Role of the GNC

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CHAPTER III

THE EDUCATION AND SUPPLY OF NURSES IN RELATION TO THE LIFE SCIENCES

3.1 Introduction

Ensuring the provision of a curriculum in nurse education which affords not only a sound knowledge base in the life sciences, but a clear understanding of the relation between the knowledge base and clinical practice, may be only one aspect of the professional preparation of nurses, but it is nevertheless an important one. It is therefore a matter of educational interest to note the fact that, in the 65 years since the establishment of the nurses' professional statutory body, few attempts appear to have been made:-

- a) to carry out any searching analysis of professional needs in this area; and
- b) to develop and, in particular, to evaluate, experimental curricula.

At a time when there is growing concern about nurse education at all levels, this apparent neglect is worth exploring briefly. First, however, it is necessary to outline the context within which planning occurs.

3.2 The Role of the GNC

The passing of the Nurses' Registration Act of 1919 was

preceded by a long struggle for professional recognition. Hector (1975) provides a comprehensive discussion of the role of Mrs Bedford-Fenwick in the struggle and the numerous Parliamentary activities that focused attention on the nurses' demands for statutory recognition. A medical writer (Cope 1955) draws attention to the fact that medical and nursing opposition to these activities was considerable. Cope notes:

It was well known, for instance, that Miss Nightingale and her friends did not support it, and the medical staffs and Board of Governors of many hospitals, particularly the teaching hospitals, were known to be vehemently opposed to the idea. A Central Hospital Council comprising representatives of all the teaching hospitals of London was formed and conducted active propaganda against State Registration.

White (1978) relates the emergence of the Poor Law Institutions to the development of nursing and argues that expediency, rather than any willingness to reform nursing for its professional progress, was the dominant philosophy of the late nineteenth century health administrators and politicians. In spite of fierce opposition, the act established the GNC for England and Wales as the statutory body responsible for the Register of Nurses. The educational implications of State Registration for nurses have been discussed in a number of historical studies. In a comprehensive history of the GNC, Bendall and Raybould (1969) examined the statutory position of nursing and the educational and professional implications of the 1919 Act. It required the Council to fulfil four major roles in relation

to nursing - prescription of a syllabus of training, examination of those who complete the training in the prescribed period, their registration if successful in the State Final Examinations and disciplinary responsibilities in the case of professional misconduct by a registered nurse (Pyne 1982).

The GNC's role in the development of the nursing curriculum is fundamental. All recommendations of the Education Committee of the Council are subject to its approval. In a review of the development of the GNC, Allan and Jolley (1982) note the adoption by the GNC of six principles proposed by its Education Committee in 1922. These principles laid the foundation for entry conditions, length of training, education and examination of the nurse prior to registration. A draft syllabus was produced early in the GNC's existence (1921) with the clearly stated objective of establishing a knowledge-based training for nurses. The Committee has retained this responsibility for making recommendations about the curriculum. The Committee also (i) considers proposals for course development from schools of nursing and other institutions responsible for the training of nurses for State Registration (ii) sets the standard of nurse training in relation to the number of beds (e.g. in 1957, the minimum number of beds was set at 300, with a daily bed occupancy of not less than 250), and the provision of a specified period of clinical experiences for the learner.

The Secretary of State for Health and Social Services accredits each training school for a period of five years and

continued approval is achieved through reports from the GNC's inspectors. The inspectorate division of the Council carries out the inspection of all training schools periodically in order to ascertain that the conditions for approval have been maintained. The GNC thus establishes and controls professional standards. Its position is upheld by the law which requires that 'reasonable care' will be demonstrated in the performance of professional tasks.

3.3 The Background Knowledge of Learners

Developing an understanding of the life sciences calls for some basic knowledge in physics, chemistry and biology, which raises the question of entry qualifications in relation to these sciences.

In an examination of the social history of nursing, Maggs (1976) considers that changes in Factory Acts and in various Education Acts have affected recruitment into nursing. Teaching and nursing as occupations open to women attracted those with good educational backgrounds, but what was 'good education?' Maggs suggests that formal academic education was not what early aspirants were required to demonstrate:

Quite apart from the essentials of reading and writing ability, the general impression about recruits is that character was more important than educational achievement.

It can be argued that a good education may also be a preparation for character formation and moral development and that, in any case, a paramount consideration might be the ultimate aim of the training and its realisation by means of

the curriculum input.

As long ago as 1932, the GNC decided that from June 1936, candidates entering upon training must possess a General School Certificate or its equivalent. It also provided for an entrance examination in lieu of the School Certificate requirement. The economic depression had brought forward academically able recruits but, since many of those with academic qualifications might well opt for teaching, the alternative of an entrance examination should enable the nursing profession to tap a larger pool. The scheme was strongly opposed by health administrators who viewed the shift in recruitment requirement as threats to the manpower needs of the service and predicted that a consequent shortage of educationally qualified probationers would make the service grind to a halt. Many doctors, too, opposed the move. In retrospect, Bendall and Raybould (1969) claim that the opposition of doctors and administrators were both economic and entrepreneurial:

The managers were afraid that it would cause a shortage of probationers and because of this they would have to employ more trained staff at higher salaries.

Certainly, examination of the first 'Education Test' of the GNC in November, 1937 indicates that both papers were fairly demanding: they cover not only English and Arithmetic, but appreciation of music and the arts. Ironically, this was the only test of its kind until 1946, when the Council again attempted to establish an educational level for entry. This

was the Preliminary State Examination (Parts I and II), Part I of which could be taken by girls in post-School Certificate classes in schools. But the introduction of the 1962 Syllabus of the GNC led to the discontinuation of the Preliminary State Examination. Throughout this period, and beyond it, there is little evidence of any discussion or debate among those responsible for nurse education of the implications of the changes for the nursing curriculum.

Even today, the GNC successor (ENB) does not formally insist on passes in physics, chemistry and biology even at GCE 'O' level or CSE, although it does expect one of the subjects to be offered by a prospective recruit to be a science. It may be that a formal requirement could have a drastic effect on recruitment, though it seems to be assumed that the more scientific knowledge a nurse possesses, the better and it could be argued that a nurse with GCE 'A' level passes in one or more of the sciences would have a considerable headstart. However, while an initial lack of knowledge of physics, chemistry and biology may be a handicap in studying the life sciences, it is not at all clear whether or not it matters in the long term (a) in terms of success or failure in the Final Examination, and (b) in terms of the development of that understanding so necessary for the development of professional competence in clinical situations.

3.4 Developing a nursing curriculum

The evidence from Bendall and Raybould's (1969) analysis suggests that while legislative recognition was pursued with

vigour by nurses because of political and professional expediency for control of nursing practice, the provision of a scientific education for nurses seemed a less compelling objective for nurse reformers. More recent studies have sought to show how different constraints affected, adversely, the emerging nursing professional consciousness and the contribution of educational development to its future advance.

For instance, Maggs (1981) suggests that the late nineteenth century approach to nursing education was based on the premise that the functions to be performed by nurses required little or no formal educational preparation. Indeed, the nursing profession was not demonstrably concerned with the development of educational policies at the outset, even after State Registration had been won. As Davies (1977) notes, the profession had very little to say about its own future development both before and following the Nurses Registration Act which established the GNC. She suggests that the explanation may lie in the existence of an initial strategy which was concerned with the numbers rather than the quality of the nurses to be registered under the Act. Moreover, nurses had an ambivalent attitude toward registration which, Davies argues, represented another example of the lack of co-ordinated effort to prescribe a sound educational basis for the practice of nursing. Other evidence from the literature suggests that a continuing constraint on early development in nursing education was its close but subordinate association with medicine. For example, the

Lancet Commission (1932) was set up ostensibly by the publisher of this medical journal because of a concern for nursing, and the Commission clearly saw the profession as a supply of labour to assist the physician in his duties.

The early years of the GNC were therefore a period of difficult decisions which forced the Council to limit the scope of its educational and professional development. A number of writers, with the benefit of hindsight, have suggested that nursing at that stage lacked administrative and educational cohesion. For instance, Abel-Smith (1960) notes the lack of a knowledge base for the distinctive responsibility of the professional nurse which compelled nurses to rely on medicine for the knowledge required for practice. There was also a debate concerned with what Davies (1976) describes as "what nursing should do and where it should go." This debate was prolonged, traumatic, and was based on distinct ethos. She suggests that this ethos involved "deference to the doctor, routinization of work and acceptance of a broad range of tasks some of which may be considered menial." This orientation towards a predominantly subordinate position to medicine was not, however, wholeheartedly supported by the medical profession itself.

A medical contributor to the debate (Balme 1937 cited by Wilson 1975) considered the form of orientation indefensible in the climate of rapid professionalisation of nursing. Balme was supported by another medical writer (Carter 1939) who argued that nursing should be accorded professional

recognition in its own right. The fact that this debate was going on two decades after the Nurses' Registration Act would seem to suggest that all was not well in the initial progress of nursing towards professionalisation. However, official interest in nursing was equalled by sustained professional demands by nurses themselves. For instance, the series of reports by various committees between 1939 and 1972 such as Athlone (1939), Platt (1964) and Briggs (1972) all highlight the necessity for nursing education to be responsive to changes in society's needs and demands. And, as we have seen above, and from White (1982), there is an extensive historical catalogue of social, economic and professional pressures which affected development in nursing and which shaped the strategies adopted by reformers over the years.

For, in spite of concerted opposition to State Registration for nurses, the Council was established and it grappled with its educational responsibilities but there is no evidence of a planned philosophical base from which the curriculum was developed. This was perhaps to be expected for, as Bendall and Raybould (1969) point out, medicine had experienced similar difficulties following the Medical Act of 1858 which established the General Medical Council (GMC). It could be argued that the apparent lack of curricular direction of the GNC, viewed in retrospect, could be blamed on frustration born of a fight against entrenched medical attitudes of the time. It could also be that, six decades after the enactment of the Medical Act, the rise of professional nursing threatened the medical profession and, in terms of power

struggle, it represented a challenge to the male dominance of the period.

Despite these early limited educational developments, the growth of nursing continued to demand serious attention from nurses themselves. The RCN was founded in 1916 and provided a forum for the discussion of professional issues free from statutory constraints. It played a crucial part in the on-going development of nursing education through its direct involvement in the education of the nurse and participation in national deliberations on health matters. The philosophical position of the RCN and the statutory framework of the GNC guaranteed support for the developing profession.

3.5 Conflicting Needs and Interests

The evidence suggests that a number of constraints hindered the development of a care-orientated educational preparation for nurses and nurse teachers. Some of the most important of these have their origins in conflicting needs and interests:-

1. As we have seen, Davies (1977) has argued that, initially, the nursing profession showed little concern for the development of a specifically nursing-orientated educational policy, and this apparent apathy was consolidated by their ambivalence about the whole question of registration.

2. Entrenched medical attitudes were also in conflict with any ideas about different approaches to nurse education.

3. Territorial conflict between the GNC and RCN. The Nurses Acts of 1943, 1949 and 1957 represented a period of nursing history during which education and service needs conflicted

and created challenges for the GNC, RCN and the governments of the day because of changes in nurse training. The 1949 Act which came in the wake of the establishment of the National Health Service (NHS) in 1948, was the culmination of extensive discussions and consultations between the government and the medical profession in which both the GNC and RCN were canvassed. The acrimonious debate that ensued has been reviewed by a number of authors and White (1982) suggests that mutual suspicion by the GNC and RCN of each other ensured that several important government proposals were opposed and failed to reach the Statute Book. For example, the establishment of Area Nurse Training Committees (ANTC) as separate bodies from the Regional Health Boards (RHB) and accountable to the GNC was opposed by the RCN.

Yet such an arrangement would have had far-reaching effects on nursing education in that the GNC would have had a more effective control of these bodies with immense financial control of the nursing education budget. Indeed, White notes the astonishment of civil servants at the RCN's insistence that the ANTCs, when established, should be placed under the RHBs in spite of the fact that such an arrangement reinforced the conflict between education and service and the needs of nurses in training. White (1982) states:

The Ministry was disappointed that the RCN did not wish the GNC to handle training funds as the civil servants had wanted to establish a position similar to the University Grants Committee.

This was, arguably, a missed opportunity. The explanation for

this attitude of the RCN was that the College of Nursing (later RCN) had itself expected to become the registering body for nurses in 1919 (Cowie 1982). The College subsequently saw its role as that of advancing the professional status of the nurse but this issue lies at the heart of a problem which had beset nursing education from its inception. The continued conflict between service needs, represented by government and nurses in administration and the professional education of nurses, represented by the GNC and schools of nursing, is the origin of the learner-employee dilemma which a grant awarding body would have avoided (see 5 below).

4. Davies (1977) also suggests that those responsible for devising strategies for the provision of a professional education have been so pre-occupied with problems of quantity (i.e. recruitment) that there has been an inevitable neglect of quality in so far as this depends upon the nursing curriculum provided. Thus, for example, although many might like to see entry requirements to include a specific level of attainment in respect of the basic sciences of biology, chemistry and physics, essential to an understanding of the nursing life sciences, the effect upon recruitment would be disastrous. Other important factors affect recruitment (e.g. pay and conditions of service, career prospects) and with these has also served to deflect attention away from the curriculum as the demand for nurses has grown throughout the country.

By 1938, the shortage of nurses had forced the GNC to approve a second grade of nurses, designated 'assistant', rather than

'registered' nurses. Pressures grew rapidly with the advent of the NHS in 1948 for, as Abel-Smith pointed out in 1960, the impact of the new service on manpower demands was particularly heavy on the nursing profession, which constitutes the largest group of professional workers in the NHS. The new structure created larger schools and made considerable demands on the supply of teachers of nurses (see Chapter IV) - another factor constraining curriculum change.

5. The learner-employee status of nurses in training created conflicting demands between education and service. The nurse occupies a number of roles, a fact which must be reflected in her professional education. With this in mind, James (1972) reviews trends in nurse education and notes that the concept of a nurse is difficult to define. He suggests that this difficulty arises from the fact that the nurse, as a professional, could simultaneously fulfil the role of a "clinician, a social worker, an administrator, an educator, an investigator, an innovator, a clerk and a domestic help." He points out that different emphasis can be put on different aspects of these roles and the learner-employee status of nurses in training reflects this multiplicity of roles as an underlying issue in nursing education.

More importantly, learners (apart from those undertaking degree courses), are employees of the health authorities and are required to agree to conditions of employment in which service takes precedence over education and training. The student nurse is, in fact, an apprentice. In keeping with this status, contracts of employment signed at the beginning

of training confer rights as well as obligations on the learner.

A number of studies have considered the essential tensions created by learner-employee status e.g. the government-initiated Wood Report(1948) and Briggs Report (1972); Horder (1942) and Platt (1964) both initiated by the profession through the RCN; Nuffield Provincial Hospital Trust (1953), an independent body, and by individual researchers such as Birch (1974); MacGuire (1969) and Scott-Wright (1968). In all these studies, however, the importance of the learner-employee status of recruits was played down because of the premise that learners were needed to give service and any consideration of their training should accept that as the starting point. In recent years, the staff of the Research Unit of the former GNC have contributed to these investigations. Studies by Singh (1971; 1972) concerned with an evaluation of experimental courses for student nurses provided insight into aspects of the learner-employee status. Other studies by the Unit such as those by Long (1976) and Sims (1976) provided support for the view that service commitment of learners were crucial factors in meeting the staffing needs of training hospitals.

Evidence from other studies document this contribution more directly. Thus in the report of "The Work of the Nurses in Hospitals Wards" by the Nuffield Provincial Hospital Trust (1953), it was stated that 74% of the time contributed to the care of patients was by learners. A decade later in another

report, "Chance or choice in nursing", the Oxford Operational Research Unit (1963) found that learners contributed 53.6% of the nursing care in the sampled hospitals in the region.

These findings provide evidence to support a suspicion of overwhelming reliance, on the part of the nursing service, on student labour for the major share of nursing care. This reliance and its extent is also illustrated by findings on studies concerned with patient dependency. The objective of such studies was to provide a rational basis for the calculation of nursing workload and staffing levels. Findings from investigations by Barr (1967), Rhys-Hearn (1972), Mulligan (1972) and Miller (1976) have highlighted the need for patient dependency and work measurement indices to guide staffing policies. While the various formulae and calculations based upon them attempt to provide objective methods for staff allocation, they generally omit discussions of the wider issues of learners as employees and their service commitments as part of the elaborate calculations.

A number of recent studies based on observed patterns of nursing activities in the wards have in part redressed the imbalance by focusing on the contributions made by learners to staffing levels on the observed wards. Moores (1979) found that considerable fluctuations occurred in staffing mix in the wards observed which involved learners' contributions. He reports that:

During the course of the observational duty the numbers of student nurses assigned to the ward in one of the study hospitals varies so much that the

consequent fluctuations even created problems relating to the scheduling of observers. In one ward, for example, there were three student nurses. In the same ward the following week this number had risen to seventeen.

Moore's conceded that this might be an exceptional occurrence. Yet a subsequent computer analysis of off-duty rotas from the same hospital showed that learners were in the main used to cover week-end work and in large numbers. This finding would seem to lend weight to the view that, in nursing, the employee status of the learner is an overriding one and that education and training needs are perhaps secondary to this main purpose of the recruitment into the health service. For, despite the requirement for specific clinical experience laid down by the GNC in its Syllabus of Training (GNC, 1962; 1969; 1977), the evidence from the literature suggests that little balance exists between a service needs of an institution and its statutory obligations to provide a comprehensive professional clinical experience for learners.

The Wood Report (1948) recommended, amongst other wide-ranging reforms, that learners should be accorded full student status. The Platt Committee (1964) echoed the same call which, as Allan and Jolley (1982) note, was first made by the Education Committee of the GNC in its 1921 proposals for nurse education. The Wood Report also spelt out what Cope (1955) described as a 'revolutionary' change in nursing. Cope noted:

The proposed changes would do away with the strict apprenticeship and would substitute for it a student status in which most of pupils' time would

be occupied in receiving instructions, attending demonstrations, visiting clinics or the like. The student would be relieved of all domestic work and of those nursing duties dictated solely by the staffing demands of the hospital.

It may be argued that the exclusion (by accident or design) of practising physicians or surgeons from membership of the Wood Committee encouraged it to be adventurous in its deliberations. But the GNC rejected the Committee's plea for urgent reform while the Institute of Administrators, a decade later, concerned itself with the effect of such a change on the learners' contribution to nursing service. The Institute in its comments on the Platt Report argued that:

The objective of nurse training must be the provision of nursing care of sufficient quality and quantity to meet the needs of all those requiring such care in hospitals and elsewhere and the form and content of training must be primarily governed by this consideration. This seems to have been too much overlooked by the Committee, and its report give quite inadequate consideration to the consequences of withdrawing students from the labour force of the hospital. (p 629)

A major contribution of the Platt Report to the debate about learner-employee status was the encouragement of experimental schemes of nurse training. The Report acknowledged that "there is evidence to prove that a nursing student can be successfully prepared for the examination for registration in two years provided the whole of this period is planned to meet education needs. (p 14)

Although no specific evidence was cited by the Committee, experimental schemes were approved by the GNC based on the philosophy of the Platt recommendations. They allowed learners to take their State Registration final examinations

after two years followed by one year of clinical experience before registration. Over 30 such schemes were approved by the GNC in 1978 (Annual Report of the GNC, 1978/79 p 19). But in a review of the 2+1 scheme in six hospitals, the GNC Research Unit showed that it was only successful if certain critical conditions were met by training schools. The major impact of this scheme was the size of intake in particular schools since it determined the educational time given to learners in schools and clinical areas (Murray 1977). In addition, any 2+1 scheme would imply rather long periods out of contact with what many learners see as 'real nursing.'

The Committee on Nursing (1972) proposed changes similar to, but more comprehensive in one respect than, previous reports. For the Committee took account of the manpower implications of its recommendations and argued, on educational grounds, for learners to have student status. It thus avoided the much discussed withdrawal of learners from the service. However, while student nurses would be financially independent of the hospital for the first two years of training, pupil nurses would continue under the apprentice system Allan & Jolley (1982). The possibility of full student status for student nurses was controversial for, if this happens, the question is, with the shortage of nurses a perennial problem, who would nurse the patient? A nurse member of the Committee, Collins (1972) argues that qualified nurses would continue to do so and learners would receive a better planned educational experience.

She points out that:

The manpower demands will be made on the trained nurses who will be needed to teach and supervise the quality of care offered to the patient by the learners....Given the incentive, and enough courses of preparation for teaching, and an intensive national 'back to nursing' recruitment campaign, we believe that this could be met; and that nurses will rise to the occasion (p 1595)

But whatever permutations might be calculated and achieved for learner involvement in the provision of care during training, problems would remain because of the contractual obligations into which they enter when recruited. The GNC recognised this difficulty and supported the recommendation of the Committee "that students should not consider themselves as, nor be considered as, part of the ordinary labour force of the regional health services (paragraph 361). It advised the DHSS in 1976 that it favoured the payment of a training allowance to student nurses but felt a need for the status of the learner to be clearly that of a student rather than an employee (Annual Report, 1978/79: p 38).

An important area of concern in all these considerations is the cost of training nurses. The Briggs Report detailed results of surveys which were commissioned to ensure that recommendations reflected the most up-to-date data. One of the survey related to the cost of training at the time of the Committee's deliberations. Bosanquet and Clifton (1973) reviewed resources for nurse training and, as a part of the wider issue of comparative cost, carried out an analysis of

the cost of medical education together with training in the engineering and gas industries where apprenticeship is the normal form of training for non-graduate employees. The authors agreed that while nurses had generally accepted the philosophy of the reforms recommended by Briggs, substantial doubts remained as to how resources could be found to implement some of the recommended changes. The change from employee to student status was one of these, and they showed that while it cost on average £360.00 and £256.00 per annum respectively to train a student or pupil nurse, the corresponding cost for medical students was reported to be from about £5,079.00 to £8,770.00 depending on whether entry was directly into medical school or after exemption from First and Second MB (bachelor of medicine) examinations. In teacher training, which was also considered, the cost was reported as £2,027.00. These figures relate to average costs per annum. Although figures such as these portrayed the training of nurses as being relatively cheaper, it could be argued that the authors had not compared like with like, in terms of both the length of education and its setting for medical students and trainee teachers. Nevertheless, a clear disparity had been demonstrated and the authors admitted that there were hidden costs in nursing education which could not be calculated.

For instance, they pointed out that nursing uses the services of eminent doctors in the training of learners because of its location in the hospital. They concluded, however, that the increase in the failure rate at the final State Registration

Examination would seem to suggest that these apparent advantages were not helping nurse learners.

The debate about student status continues. The establishment of the United Kingdom Central Council for Nursing, Midwifery and Health Visiting (UKCC) and the National Boards in England and Wales (1983) provides a further opportunity for reflection, decision and action on the learner employee status of the student and pupil nurses. Working Group 3 of the UKCC has recently rejected the notion of student status for learners in its report (1983) on the ground of its impracticality, and suggested the term 'protected employee'. In its response to this proposal, the GNC (1983) argue:

The Council considers that replacing student status by the term 'protected employee' status will not change the present position.... Council notes with regret that the Central Council has not given greater priority to changing the employment status of the student nurse (GNC, Annual Report, 1981/1982, p 27/28).

This reaction might seem at first to be a reflection of the Council's belief, but in its own evidence to the Royal Commission on the NHS two years earlier, the GNC recommended that the trainee should remain an employee while the RCN disagreed at the time:

In urging that nurse learners should be accorded student status the RCN is not departing from its strongly held view that nursing can only be taught and learnt in the context of giving care. In the course of training student will give service; this does not require that they be employees of the service authority. (RCN, p 202).

The wheel has turned full circle in the discussion about the learner as an employee in nursing. The UKCC, like its

predecessor, the GNC earlier in its history, appears to have bowed to political expedience through Working Group 3, which supported the retention of the status quo on nursing education. Yet recent research suggests that learners who left nursing did so because of job dissatisfaction and unfavourable conditions of service (Annandale-Steiner 1979).

3.6 Studies relating to teaching and ----- learning the life sciences in schools ----- of nursing -----

Two earlier studies, Nolan (1973) and Ingram (1973) were both concerned with teaching methods in human biology, rather than course content. By means of interview schedules and questionnaires, Nolan canvassed the views of staffs in schools of nursing and colleges of further education. He found that expository teaching was generally used in schools of nursing, whereas an experimental approach was adopted in colleges of further education, and his study suggests that tutors in schools of nursing lack the necessary biological expertise required for the adoption of an experimental approach (i.e. of practical work such as dissection of cadavers). This raises questions about nurse tutor preparation which will be addressed later in this thesis.

Ingram (1973) reported an innovatory approach to the teaching of human biology in a Scottish school of nursing. Here a biology laboratory was used, and Ingram found that most learners in this school preferred this experimental approach. Clearly, concepts such as 'osmosis' and 'diffusion' are difficult for learners to appreciate in the abstract, and a

demonstration of osmosis through a semi-permeable memberane, and of 'Brownian motion' provide empirical experience as aid to understanding.

A major study which explored the contributions of the biological/life sciences to nursing was reported by Wilson in 1975. The study investigated:-

1. the extent of staff nurses' knowledge of the biological sciences which, for all practical purposes, constitute the life sciences as defined in this thesis;
2. the pattern of learning the life sciences during student nurse training, and the extent to which staff nurses' and learners' knowledge of these sciences was related to the activities carried out on the wards;
3. the doctors' expectations about staff nurses' knowledge and responsibilities in these areas.

The following hypotheses were tested by Wilson:

- i) Staff nurses will have superior knowledge of the biological sciences as compared with student nurses.
- ii) Student nurses will acquire more knowledge of the biological sciences with each year of seniority.
- iii) Doctors will assume that staff nurses have more knowledge of the biological sciences than they do, in fact, have
- iv) Senior doctors will assume more knowledge in staff nurses than junior doctors.

Wilson's sample consisted of 214 doctors in 3 hospitals, and 532 nurses - staff nurses and learners in first, second and third years of training. Two instruments were used:-

- i) a questionnaire for doctors. This contained 19 questions, covering areas of the life sciences and clinical practice in which doctors might expect staff nurse to be knowledgeable.
- ii) a 'Science Test' for the nurses based on the same areas of the life sciences.

This gave a list of nursing activities which Wilson had observed on the wards and nurses were required to indicate the knowledge of the life sciences upon which the specified nursing activities depended. Nurses also completed an intelligence test, and provided information on their general educational backgrounds in the basic sciences (which proved to be above average).

Non-parametric statistics were used to calculate coefficients of correlation between the scores of the four groups.

The findings are of considerable importance, in spite of certain methodological weaknesses:-

1. The complete absence of any theoretical consideration of the definition of knowledge and its teaching and learning problems with regard to the life sciences as studied by nurses and doctors was a serious omission. However, an attempt was made to identify a definition of the knowledge of the life sciences required by practising registered nurses for professional competence.
2. It is far from evident that each year of seniority confers

a higher level of knowledge of the life sciences on a learner. (Note, too, that the understanding necessary for professional competence depends on rather more than mere knowledge, which may represent little more than rote memorisation). Further, a student with either 'GCE' A level or a degree in a biological subject could be far more knowledgeable about the subjects in the science test than a staff nurse whose sole educational input in this area has occurred during training.

3. Those relating to the use of the 'Science Test' and questionnaire for different groups (a) clinical items on which the medical opinions were sought for correlation were nursing procedures such as 'oral hygiene' and 'disinfection of bath'. For the responding doctors, these were theoretical rather than practical matters because they do not normally carry out such procedures in the nursing context. It is analogous to asking nurses how a particular operation might be performed.

b) More fundamentally, items were selected to reflect knowledge of applied anatomy, physiology, microbiology and pharmacology, but the degree of discrimination between these items could not be properly related to specific practical application. For instance, how does 'bladder irrigation' relate to the 'germ theory of disease' from microbiology? How relevant is the latter to the practising nurse? These relationships need to be clarified.

c) Possibly more serious is the correlation of sets of data resulting from a science test for nurses and a questionnaire

for doctors based on items in the test. It could be argued that these were essentially two distinct sets of results, and such comparisons probably stretched the relationships too far.

In spite of these criticisms, however, the study is an important one because of the questions it raises about both knowledge input, and the development of an understanding necessary for professional competence in applying it. For although Wilson's nurses began their training with an average level of educational attainment in the basic sciences, her study reveals a serious gap between the level of doctors' expectations about staff nurses' knowledge of the life sciences, and the real situation. While it is generally agreed that ideal and reality may be different in nursing practice, this finding (when taken together with that of Bendall, 1973), constitute a matter of serious concern for the nursing profession.

Wilson concludes that the knowledge input in the biological sciences in nurse education is ill-defined and certainly, syllabuses for both general and specialised nursing courses often lack definition. A much more disturbing aspect of the study is, however, the evidence which suggests that the application of theoretical knowledge in the biological sciences input is 'unstructured and appears to be haphazard.' (p 76).

These findings suggest, therefore, that nurse education may not be providing, in any adequate way, either an appropriate knowledge base in the life sciences, or the necessary level of understanding for professionally competent application of

that knowledge in clinical situations. The problem of the application of theoretical knowledge in clinical situations is one of considerable research interest (Montague, 1982). Indeed, Wilson's findings call into question current provision in terms of syllabuses, courses for learners (in schools) and courses for nurse teachers themselves. This does not appear to be so much a matter of quantity as of quality, where 'quality' is defined in relation to its effectiveness in developing professional competence and confidence, and in relation to patient care and welfare.

3.7 Designing a curriculum for nurse training

The literature suggests sound reasons for the apparent neglect of the nursing curriculum in spite of reported and growing expression of concern (see, for example, Briggs 1972). In 1960, Abel-Smith noted that educationists involved in the search for an appropriate curriculum for nurse education acknowledged that an important pre-requisite was for the profession to ask appropriate questions on what the training is for before designing a syllabus that prepares the learner for the tasks to be performed. This is clearly an enormous task, and the quest for an appropriate strategy is beset by difficulties of many kinds.

To start from questions of what constitutes high quality care, regarded as an important objective of nursing education, creates formidable and possibly insoluble problems. In a review of the issues, Hawthorn (1974) discussed the non-measurability of the quality of nursing

care and noted: "We are in the realm of considerable ambiguity and subjective judgement." For Hayward (1977), the problem relates to the "search for objective indices by which the quality of nursing care could be measured." Such indices are, however, likely to remain elusive and controversial (as those who have tried to define and assess the quality of teaching in schools and institutions of higher education have found). In general terms, this is because so many value judgements are involved in deciding what constitutes 'good' practice or a high quality product. From the point of view of nursing, it is also because of the existence of many complex causal relationships (many of them not clearly understood) between the care provided and the patient's progress. One approach to the resolution of this problem of definition is to classify nursing activities. Thus Hawthorn (1974) discusses two main categories, namely 'direct' and 'indirect' nursing care. Classification of nursing activities into specific tasks provides one basis for determining educational objectives (relating to behavioural activities only) in curriculum planning and so this has been attempted. For instance, Goddard (1963) itemised nursing components into four specific functions:

1. Technical nursing - concerned with medical prescription in which the physician provides substantial expertise and therapeutic support for the patient.
2. Basic nursing - concerned with the care and comfort of the individual as these are related to activities of daily living (ADL). Henderson (1966) describes these as basic functions of nurses which are essentially to assist individuals to carry

out normal body functions where the capacity to do so is deficient in some way. More recent theorists have used similar conceptual bases for their proposals (Reihl and Roy 1980).

3. Administrative and organisation- these are the province of the qualified nurse and as Pembrey (1979) suggests, these are the areas in which the ward sister's role is at its most demanding both of knowledge base for clinical decisions and generally for administrative management of staff and other resources.

4. Domestic duties - concerned with the area sometimes described as non-nursing although nurses are expected to be responsible for ensuring that they are carried out by the untrained in the interest of the patients.

These activities represent the realities of daily experience for learners and a responsive curriculum must reflect this reality. Moreover, if (as has been argued in Chapter II), it is desirable to move towards a curriculum based on a nursing model of 'care,' then nursing tasks may well be the most fruitful starting point for the analysis that should precede curriculum innovation. The quality of care provided (however that might be defined), will depend upon the professional competence with which nursing tasks, from the simplest to the most complex, are performed and, where appropriate, initiated.

More recently, Maanen (1979) examined the problems of quality of nursing care from both sides of the Atlantic and notes

major difficulties in attempts to measure it in practice. Hawthorn (1984) reported a study which attempted the development of a method to measure the effects of the introduction of the nursing process in a 'long-term' geriatric ward. She concluded that:

Objective measures of evaluating the effects of changing pattern of nursing care are urgently required.

In a review of the literature on the measurement of adequate care, Openshaw (1984) argues that 'Much nursing care cannot be based on the results of tests and it cannot be objectified by adopting a theory which is a mere description of idealized care.' It may be argued that whatever the level of care that is given, however, should perhaps reflect an adequate knowledge base for competent practice. As will be argued in Chapter V, professional competence is in part dependent upon a linking of theory (knowledge base) with practice (the performance of tasks) via a clear understanding of the reasons for every action or for inaction. It seems feasible, therefore, to suggest that curriculum planning on a 'caring' model might indeed start from an analysis of nursing tasks (a) as such and (b) in terms of the knowledge applied in their performance. In this way, the focus will remain on knowledge appropriate to nursing care which could then provide the basis for deciding upon knowledge inputs (syllabuses), paying due attention to structure so as to ensure transfer and so a clear understanding of the knowledge

and principles to be applied, and of appropriate action. In Chapter V, these ideas have been developed in relation to what is termed a bionursing approach to the life sciences curriculum in nursing education.

3.8 Summary

Very little research appears to have been carried out in relation to the role and relevance of the life sciences input in nurse education, while commentators have, for the most part, done little more than deplore the failure to analyse and develop a curriculum with a distinctive knowledge base. The literature survey does, however, reveal a number of serious constraints which may account, in large measure, for the apparent neglect. Among these are historical factors, the acceptance of a subsidiary role for nurses, territorial rivalry between GNC and RCN, and probably most significant, a preoccupation with quantity at the expense of quality as well as the learner-employee status of nursing students. Growing concern within the last twenty years has, however, focused attention upon the need for rethinking nurse education. As far as any rethinking of the knowledge input is concerned, a promising starting point for analysis and subsequent experiment seems to be what nurses actually do (i.e. nursing tasks). In Chapter V, this idea is developed further in an attempt to identify and define a starting point for the proposed bionursing approach to the life sciences curriculum in nurse education. First, however, it is necessary to consider the extent to which nurse tutor courses currently prepare nurse teachers to deal with the life

sciences knowledge and its application in nursing tasks, linking theory with practice in such a way as to develop that clear understanding which, it is argued in this thesis, is so essential for professional competence of the nurse.

CHAPTER FOUR

CHAPTER OUTLINE

PART I

CHAPTER IV

LITERATURE REVIEW: THE LIFE SCIENCES AND THE PREPARATION OF
NURSE TUTORS

4.1 Introduction

4.2 The supply of nurse tutors

4.3 Preparation of Nurse Tutors

4.4 The views of practising teachers

4.5 Summary

CHAPTER IV

THE PREPARATION AND SUPPLY OF NURSE TUTORS AND THE LIFE
SCIENCES4.1 Introduction

Since 1914, when the first nurse tutor was appointed, nurse tutor preparation has represented one of the main professional routes to personal advancement for the aspiring nurse (Green 1981). In spite of this, the problem of finding and maintaining a sufficient pool of nurse tutors in the face of (1) the ever-growing demands of the NHS and (2) the extended teaching responsibilities of the nurse tutor (discussed in Chapter II), have been formidable. Efforts aimed at remedying the problems of quantity are, as we have seen (Chapter III), often inimical to quality and vice versa, but in the case of nurse teacher preparation, it seems likely that the perceived desirability and the fact of extended teaching responsibilities for nurse teachers, have acted as valuable controls.

4.2 The supply of nurse tutors

As with nurse training, the entrance requirements for nurse tutor training will affect both quality and quantity and, once again, the two needs may be in conflict. Quality (however that may be determined and measured - see chapter III) is safeguarded by the GNC (now the English National Board - ENB), which requires applicants to be registered

nurses on any part of the register and to have a minimum period of appropriate post-registration experience. Initially, the GNC stipulated that prospective teachers must have had four years' post-registration experience, two years of which must be as ward sister/charge nurse in an approved training school. By 1958, however, the shortage of nurse tutors was so acute that action was necessary (Bendall and Raybould 1969). One result was that the experience requirement was reduced from four to two years, only one of which had to be spent in an approved training school as a ward sister or charge nurse.

This had important implications for nursing education in that nurse tutor students could now begin their training with a reduced period of clinical experience than was previously the case. The Nurses Rules (1969) and subsequent amendments (1973; 1976) stipulated that 'not less than one year has been spent as a person in charge of a ward or department of an approved training institution in which pupil or student nurses are regularly trained'; and 'not less than one year has been spent in other clinical nursing acceptable to the Council for the purposes of this paragraph.' (Rule 36 (i) and (ii)). This limited experience would clearly mean a less developed professional competence upon which to base teacher preparation. It could be argued, therefore that, since nursing education appears to place considerable emphasis on clinical competence, a more effective approach might be to lengthen the period of practical experience, and then to shorten the teacher-training course by focusing on teaching

methods. Evaluation of either approach would clearly be essential before any further discussion about effectiveness became possible. No such evaluation has occurred.

For some fifty years, a single grade of nurse teacher was prepared by means of a two-year Sister-Tutor Diploma (STD) course. This course was introduced by the University of London in 1926 and provided by the RCN, Battersea College of Technology and Queen Elizabeth College (an internal school of the University of London). The course was of a one-year duration but this was increased to two years in 1933 because the University felt that nurse tutors needed a substantial input of the life sciences and pathology for their teaching responsibilities. The course remained as such for some forty years when the improved qualifications of entrants and the requirement for longer professional experience made a shortened course possible. Clearly, a shorter course might go some way towards alleviating the chronic shortage of nurse tutors which has permeated every report on the nursing profession since the Lancet Report of 1932.

The introduction of an alternative nursing course for State Enrolled Nurses (SEN) in 1943, and the advent of the NHS in 1948, increased pressure on the profession and accelerated moves towards enlarging the cadre of nurse teachers (Abel-Smith 1960) to match the increased number of learners. It was evident that the existing three courses (all of them based in London) could not cope with the need and so, in 1958, a second measure was taken by the GNC (in addition to

the reduced entry requirements for nurse teacher training). It approached four technical teacher training colleges - Garnett in London, Bolton and Huddersfield in the North and Wolverhampton in the West Midlands - to see if they were interested in establishing nurse teacher courses. Bolton responded with an experimental one-year course, which started in 1965. Shortening the duration of training was clearly a step taken in the interest of quantity, but this constituted a threat to quality unless entrants had either high qualifications or special professional experience.

In spite of the fact that the effectiveness of the one-year course was not adequately evaluated, the GNC advocated the extension of these courses in 1969 and, during the early 1970s, these became typical. In some ways, this is similar to the introduction of experimental 2+1 training in basic nursing education following the Platt Report (1964).

Other factors were, however, involved in granting approval to one year courses for nurse teachers. 1969 also saw the establishment of two grades of nurse teachers and the beginning of the phasing out of the STD course which was finally completed by the RCN in 1982 when its last students qualified.

The Salmon Report (1966) had advocated a phased approach to qualification as a 'nurse tutor' via qualification as a 'clinical teacher'. This proposal for a structured and phased scheme was endorsed by the Nurse Tutor Working Party (NTWP,

DHSS,1970), who recommended three stages in the preparation of nurse tutors following initial registration, namely, the Diploma in Nursing of the University of London, through qualification in clinical teaching, to preparation as a nurse tutor. The Working Party argued that such a scheme could mean that an individual would spend a short time away from home and work at a college on three separate occasions, instead of as at present spending one or two whole years. Nevertheless, the report was cautious and admitted the existence of "many unknowns at present" and the need to keep the position "under close review." Thus the report echoed the views of the Salmon Report (1966) that:

Other teaching posts in Grade 6 (Charge Nurse), those of Teacher of Pupil Nurses and Clinical Instructors, are best regarded as posts in which nurses test their aptitude for teaching before going on to become registered tutors.(paragraph 7.46).

A critical examination of the implementation of these proposals suggests that it had been piecemeal and partial, especially in relation to qualifications regarded as acceptable for admission to both nurse tutor and clinical teacher courses, so that variations have occurred from one training department to another. The revised syllabus of the Diploma in Nursing is now offered by about 30 institutions in England, Wales and Scotland (June 1984) on a three-year part-time basis, but it is possible to enter nurse tutor courses without obtaining the full qualifications e.g. previously through the possession of Part A of the old Diploma in Nursing and now by passes in Units 1 and 2 (in some institutions) and Units 1-4 in others. It should be

noted that while Part A of the old Diploma covered pathophysiology, Units 1 and 2 of the new are concerned with the 'Human Organism' in the biological, psychological and sociological aspects of existence. On the other hand, Units 3 and 4 cover nursing skills and its professional development. The Diploma itself is awarded with the successful completion of Units 5 and 6 which deal with nursing research and advanced nursing practice. The first group of students under these arrangements are due to qualify in the Summer of 1984.

A very important consequence is that it is possible for entrants to embark upon teacher training having had no further instruction in the life sciences after registration. Wilson's (1975) study suggests that this may represent a very inadequate base for professional competence and, by implication, for developing the essential linkage of theory with practice in learners under their tutelage.

The Diploma course is still regarded as providing an acceptable level of knowledge of the life sciences (particularly applied physiology) for the aspiring teacher of nurses, although understanding of its application to nursing care does not appear to have been researched.

Current debates on pay and conditions of service of nurse tutors highlight the recurring issue which has clearly dominated recent professional discussion. This centres round the problem of remuneration and promotion prospects for nurse tutors who, under existing conditions, must leave education

for service if they wish to better their financial standing. The RCN Association of Nurse Education recently published its report 'To teach or not to teach' (RCN 1981). The report detailed frustrating financial and service conditions of the teaching grade in nursing. It argued that these have resulted in falling recruitment of suitable candidates for nurse tutor courses, and lowering of standards in nursing generally, and predicted serious consequences unless changes were effected. It could be argued, however, whether what has been a central issue in nursing education has not, in itself, obscured the need for a closer, critical examination of fundamental issues related to the preparation of nurse teachers.

In spite of these interests, however, the problem of nurse tutor shortage has remained a matter of grave concern. In 1981, the GNC published data which indicated a shortage of 1605 nurse tutors in schools of nursing. The basis for this calculation was the approved teacher/learner ratio of 1:15. In the same year, the South West Thames Regional Nurse Training Committee commented:

Over the last three years there has been an increasing shortage of nurse teachers. Almost every school of nursing in the region not only cannot recruit up to target establishment, but also cannot fill the funded vacancies (set by the (RNTC))

This comment is typical of many then as now.

There have been attempts to provide reasons for this state of affairs. The RCN Association of Nursing Education Working Party (NEWP 1981) and Allan (1981) blame the lack of financial incentive and inadequacy of career advice. The Royal Commission on the NHS (1979) on the other hand, noted:

..part of the difficulty in recruiting sufficient nurse teachers has undoubtedly been that once a nurse goes into education she may effectively lose touch with clinical work. One solution to this problem would be to ensure that tutorial staff also carry a clinical load in the same way as university medical teaching staff have clinical responsibilities for National Health Service patients. We envisage that this role could be seen as an expansion of the clinical teachers's role or as a specialisation within the nursing officer role.. The increase in nurse teachers recommendation which we endorse, is now urgent, and unless it takes place the other reforms of nurse education proposed by the Committee (Briggs 1972) will not be possible (p 204)

The evidence reviewed above suggests the presence of motivational and educational factors in the recruitment of nurse tutor students. These factors apart, the shortage of nurse tutors is likely to be exacerbated by recent financial cutbacks in nurse tutor funding by the ENB. Holder (1981) has drawn attention to this problem when he noted:

The training of teachers is becoming increasingly expensive and extended. For schools of nursing and midwifery, secondment of staff to complete advanced courses is a severe drain on resources, especially in those schools where a projected ratio of one teacher to fifteen students is beyond the realm of reality.

This view would seem to be particularly poignant now that the previous Diploma in Nursing Syllabus of the University of London has been replaced by a new one based on course-units. In the past, the possession of Part A of the Diploma was regarded as evidence of adequate background knowledge of the life sciences (particularly applied physiology) which enabled holders to proceed to the nurse tutor courses. With the revised syllabus, the first two units are based on the human organism (which covers biology, psychology and sociology)

rather than in-depth applied physiology. It remains to be seen whether course directors will accept possession of units 1 and 2 of the revised syllabus as being sufficient for the required background knowledge of the life sciences for prospective nurse tutors.

Official concern over the shortage of nurse tutors has permeated every report on the nursing profession since the Lancet Report of 1932 (Watkins 1975). The implications, in terms of standards of nurse training and ultimately patient care, are indeed serious. At the same time, and as we have seen in Chapter III, a crisis of numbers distracts attention away from measures that might improve (and even ensure the maintenance of), quality which is crucial for patients' welfare.

One year courses were extended in 1969 without any real evidence as to the overall success of the pioneering Bolton course (Sheahan 1982) largely because the courses provided some sort of solution to the perennial problem of numbers. It must be noted that this is a recurring problem in all reforms of nursing education and service. Pilot schemes never seem to be genuinely used as such but rather as a way of introducing change through the expediency that such changes had worked elsewhere, might or would work without a critical appraisal and judicious evaluation of their objective success in the context of nursing. The introduction of the Salmon Report (1966) and NHS reorganisation (1974) are relevant examples and the current introduction of the Griffiths Report (1983)

looks like taking the same course towards implementation.

4.3 Preparation of Nurse Tutors

The ENB, as the body responsible for the registration of nurse tutors, sets the overall aims and objectives for the preparation of those who would teach learners. Fawkes (1972), in reviewing these aims and objectives, pointed out that teachers were being prepared specifically to meet the learning needs of the students. She noted:

Teachers need to be prepared for teaching in hospital or in the school and at the bedside, in the clinic or the department and in the community.

This approach can now be seen, in retrospect, as having set the generalist tone for nurse tutor preparation. However, specific educational objectives for these courses are laid down by training institutions and their validating authorities. For this reason, it could be argued that nationally agreed standards of preparation do not exist on paper although the ENB has a panoramic view of all the courses and is ultimately responsible for their approval as well as the funding of the places they offer to students.

It is important to be clear about the nature of the courses offered to those admitted for this preparation. Essentially, the courses are of two kinds. In one, the course covers what has been described as the 'what' i.e. professional subjects as well as the 'how' i.e. methods of teaching. Traditionally, the STD course was of this type and the first year of the

course was used for the teaching and learning of the life sciences as well as pathophysiology. The other type of course is concerned entirely with the methods of teaching only it being assumed that the student already has professional and subject-matter competence and that all that is required is the ability to teach them. This method of preparing teachers is well developed in academic teaching. The teacher starts with a relevant degree followed by an academic diploma (essentially theoretical) and later the post-graduate certificate in education before becoming a trained teacher (see Thouless's model - Appendix 13).

Nor can much be gleaned from the literature about what preparation nurse teachers receive for their important role. Green (1981), for example, noted the paucity of relevant, systematic approaches to the study of these key members of the nursing profession. Indeed, there has been no detailed examination of the role and responsibilities of nurse teachers and particularly of the adequacy or otherwise of their preparation. (See, too, Hayward and Lelean 1982).

However, Sheahan (1981) conducted a study which sought the opinions of 216 student nurses, 101 pupils and 93 teachers (senior tutors, tutors and clinical teachers) on what they considered to be the role of nurse tutors. A common set of questionnaire items was used to measure differences between the samples, with learners as the focus of the study. A total of 10 factors related to different roles of the nurse teacher were identified through factor analysis and used in the

study. The findings show agreement between learners and tutors as role models, as providers of individual attention, and of feedback to learners and as researchers in nursing. But disagreement was reported in areas of moral/pastoral role, clinical specialisation and management of the library. The author concluded that areas of agreement between learners and teachers as revealed by the study could form the basis for a systematic attempt to describe the tutor's role. The findings of this study would seem to confirm the assumption that a discrepancy exists between learners' expectations of tutors as clinical experts and the tutors' own perceptions of their role as teachers of nursing who may not see themselves in that role. It is important to note, however, that the study omitted any reference to the problem of a knowledge component in nurse tutor responsibility although specialisation could include this requirement.

Another study of student nurses and their definition of learning by Wyatt (1978) reported that learners at various stages of their training placed the nurse tutor at the top of the list of staff from whom they learnt most during their training. Wyatt pointed out that the learners named the ward as the place where most learning had taken place and they saw the chief contribution of the nurse tutor as 'preparation for examinations'.

Yet, as Lancaster (1972) noted:

In the mass of material published about the changing role of the nurse, and about the changing

pattern of nursing education at basic, post-basic, clinical and at administrative level, there is little mention of tutors' the people whose responsibility is not only to teach but to initiate new educational thinking and to play a central part in formulating and implementing educational policies in an increasingly complex environment (p 1).

The GNC has reported on its concern for this cadre of nurses in its annual reports since 1950. Yet in these three decades, there has been no satisfactory examination of, or agreed solution to, the multifarious problems that have been identified in various reports whether governmental or professional. The Royal Commission on the NHS (1979) reiterated the long-term neglect of nurse tutors and the only nurse-member of the Commission (McFarlane 1980) states:

The training and recruitment of an adequate number of enlightened teachers is pivotal to the future of nursing education and the picture is not encouraging.

She urges a review of the method of preparation to enable teachers to carry out their functions effectively in the clinical setting.

In spite of this apparent official concern (as evidenced by the plethora of governmental and professional reports on the training of nurses), there is no evidence of a diagnostic examination of courses and their appropriateness. There have been prescriptions but remained at a very general level (Bendall and Raybould 1969; Green 1981). Similarly, the recent RCN Working Party Report on the preparation of nurse tutors (1983) reiterates the problems in nurse teacher education but stops short of any fundamental re-appraisal of the prescriptive needs for solution. While the brevity of the

report may not be a reflection of the detailed debates behind the scenes, it is nevertheless disappointing in that diagnoses were made by the Committee and a number of remedies proposed, but the fundamental issues of developing appropriate curriculum for the preparation of nurse teachers appear to be buried in assumptions.

4.4 The views of practising teachers

Studies by Lancaster (1972) and the GNC Research Unit (1975) provide evidence against which nurse tutor preparation could be examined following the NTWP Report (DHSS 1970) discussed above. The study by Lancaster aimed to identify some of the factors that were likely to change the role of the nurse tutor and to consider the type of education required for the role. One hundred and sixty-five teachers of nurses in Scotland and 53 in England and Wales completed a self-administered questionnaire. The questions ranged over a wide area of issues in nurse education and nurse tutor preparation. In the GNC (1975) survey of practising and retired nurse tutors in England and Wales, Sims(1976) reported that respondents generally favoured technical teachers' courses of one-year duration as against specially designed courses for nurses such as the former STD programme. Yet although 89% of the sample (n = 2874) felt adequately prepared in teaching methods, only 13% felt adequately prepared in the interpretive aspects of their work when the application of knowledge of the life and other sciences is most crucial.

In a follow-up study, House (1976) described attitudes of teachers of nursing in England and Wales. The study was based on 956 questionnaires from the original sample of 2874 who completed the self-administered questionnaire described above. House reported considerable dissatisfaction among teachers generally but registered clinical teachers (RCNTs) were particularly resentful of their position which they considered offered little status and job satisfaction. More recently, Martin (1984) asks whether clinical teachers are 'second-class citizens' in nursing and suggests that, for many clinical teachers, a strong feeling exists because they consider their role is not fully appreciated by tutors and ward sisters. House summarises the position:

The response from clinical teachers must be a cause for concern. Not only do they constitute the largest teaching group by grade, but they also represented a uniform set of dissatisfaction and, of the 1,700 respondents who had registered as clinical teachers since 1969, more than half had since registered as tutors (p 384)

Neither of the two studies above concentrated on the problem of those actually in the course of their preparation as nurse tutors. But Lancaster's results in the area of the life sciences were striking and relevant. 74% of RNTs in her sample considered a knowledge of the life sciences as being essential for their teaching responsibilities. The possession of appropriate knowledge is important for the teacher and the type of course attended by the nurse tutor could affect this aspect of the preparation. Retrospective views of qualified tutors are important indicators of individual perception, though they do not, perhaps, constitute a reliable index of

objective evaluation of their current problems. The GNC study did not explore problems of course contents.

On balance, it could be said that these studies point to the need for a detailed examination of the education of nurses and the role of the teachers involved in it. Certainly, the problem of nursing education and its future direction would appear to be intermingled with that of the preparation of nurse tutors. The question that needs to be posed and addressed is summarised by Green (1981) in relation to the need for a knowledge base - what knowledge does the nurse tutor require for a successful career as a teacher? Green argues:

Successful teaching in the professional sphere demands not only the ability to teach but also a sound basis of professional knowledge so that the teaching can be effectively applied.

4.5 Summary

The literature reviewed in this chapter indicates a dearth of hard knowledge in relation to (i) the knowledge input in nurse tutor courses; (ii) strategies used for ensuring understanding of an appropriate knowledge base and of the way in which it is applied in practice and (iii) practice of these or similar strategies in teaching, in both schools and clinical situations.

Overall, the literature survey has highlighted a need for a more rigorous analytical approach to the life sciences curriculum in nurse education, starting from its most basic premises. It is this identified need that determined the

nature of the three components in the main empirical study. Part II, which follows, develops the rationale for the research.

CHAPTER FIVE

CHAPTER OUTLINE

PART II

THE THEORETICAL FRAMEWORK AND THE EMPIRICAL STUDY

CHAPTER V

THEORETICAL FRAMEWORK

5.1 Introduction

5.2 Learning the life sciences

5.3 A model for nursing education

5.4 Nursing and the life sciences

5.5 Developing a bionursing link

CHAPTER V

THEORETICAL FRAMEWORK

5.1 Introduction

The problem with which this study is concerned can be illustrated by an example from the Preliminary Examination Paper of the General Nursing Council for England and Wales (GNC) for the General Register in 1942. One of the questions asked candidates to: "Describe the physiology of respiration." This question illustrates the importance attached to a knowledge of physiology by the examiners of the time. A number of authors at the time also emphasised the importance of the contribution of the life sciences to the practice of nursing. One such writer, Hainsworth (1936) noted that "a sound knowledge of nursing science and practice" depends on the underlying sciences such as anatomy and physiology.

Four decades on, there are those who question the need for an in-depth knowledge of the life sciences in nursing. Thus Holford (1981) in a discussion of the place of the life sciences in nursing argues:

It matters very little whether or not the nurse understands the physiology of the (chloride shift) to care for the patient in respiratory distress. What are necessary are basic common sense and the ability to soothe and reassure. It is for the doctors to provide the rest.

In a similar vein, another contributor to the debate, Phillipson (1982) noted:

To care for the hospital patient, a handful of simple skills supported by a little knowledge is all that is necessary. Nursing auxiliaries demonstrate this daily in the NHS.

More recently in the United States, Starck (1984) questions the current teaching of the life sciences in nursing curricula. She notes the economic consequences of attempts to teach these sciences within the school of nursing as distinct disciplines and urges that more resources should be concentrated on the teaching of nursing itself.

These sciences (anatomy, physiology, microbiology and pharmacology) represent one of the key areas of scientific underpinning of nursing practice. Indeed, the need for a knowledge of these sciences appears to have been accepted as self-evident from the earliest period of organised nurse training and Nightingale (1859 cited in Skeet, 1980) was concerned that nurse education should provide the appropriate background knowledge in these sciences to enable nursing decisions to be based on a sound theoretical foundation. For if nursing tasks are to be performed with the understanding that will ensure scrupulous attention to detail in the interests of patients' safety and well-being, then the information base that supplies the reasons for every action in the performance of a nursing task must be clearly understood by the nurse. This information base has, as a substantial component, the life sciences of anatomy and physiology (the body and how it works), microbiology (the

effect on the body of micro-organisms) and pharmacology (the response of the body to the introduction of pharmacological agents) (GNC 1977).

The life science information base is defined by the syllabuses laid down by the GNC (ENB). The information is transmitted in formal lectures by doctors and nurse teachers as well as clinical staff on the wards. The knowledge, skills and attitudes developed by the nurse learner as a result of this information base are examined in a formal examination by the GNC (ENB) at the end of the training. Clinical teaching by doctors and nurses is also intended to ensure that learners come to understand the reason for the skills and techniques used in patient care i.e. what life and behavioural sciences knowledge is being applied, and why. It could be argued that such an approach would both ensure efficient carrying out of tasks with care and attention to detail (aided by the duty ethos), and help towards the development of clinical competence.

5.2 Learning the life sciences

The study of the life sciences has been a feature of the nurse education curriculum since the subjects were introduced into the GNC Syllabus of 1922 (Bendall and Raybould 1969). However, very little research appears to have been carried out in relation to the way these subjects are taught and learnt in nursing. There are a number of possible explanations for this apparent lack of research in the area of teaching and learning the life sciences in nursing. Two of

these may be considered here.

The first is that nursing traditionally relied on medicine for its life sciences curricular needs and medical staff were closely involved in the education of nurse learners for many years (Adams and Taylor 1974). It may be that one result was a version of these subjects based on the medical curriculum, while the teaching of the application of the life sciences to nursing practice was for the most part based on their pathophysiological implications (McCarthy 1972).

Secondly, it could be argued that because nursing has derived its knowledge of these sciences second-hand through medicine, teachers and practitioners have not being encouraged to search for a distinctive link between nursing and these subjects in the curriculum. Yet such a link may be necessary because of the differences in medical and nursing curricula and the way these sciences are taught in the two related disciplines (Holmes 1972).

Moreover, growing concern for professionalisation of nursing has placed an emphasis on professional competence, which recognises that responsible, accountable, nursing care is not merely an affair of carrying out instructions and performing routine tasks; but that it also requires informed observation, accurate reporting of information, and informed communication with patients and others (Rhodes 1977; Faulkner 1980; McFarlane 1977). Above all, it could be argued that professional competence should reflect informed decision-making at all times in circumstances which may be

either routine or emergency in nature. This implies the need for a measure of flexibility within a framework of procedures. This constitutes what Bosanquet and Clifton (1973) described as 'the discretionary element' in nursing care. The authors observed nursing activities in the wards over a long period and noted the following examples as requiring informed decision-making on the part of the nurses concerned:

- a) How best to turn an unconscious patient?
- b) Is Mr X (a recent coronary) changing colour and if so should the doctor be called?
- c) How does the nurse get a Ryles' tube down a confused old man who is coughing hard?
- d) Why has the registrar ordered 5mg of diamorphine as a pre-medication for a patient with chronic bronchitis who is to have supra-pubic catheter removed? Is it sensible to give this patient a drug which depresses breathing?

The authors stressed the importance of a knowledge-base for informed practice and reported:

One student nurse after eight weeks on a medical ward with numbers of patients with strokes did not know the causes of them.

The evidence above would seem to suggest that nurse education and training should be geared to the development of professional responsibility and accountability and of confidence in the individual's professional ability to act as an acknowledged 'expert' on nursing care. Fundamental to this conception of professional competence is the need to ensure that nursing education emphasises the underlying reasons for nursing tasks and other activities which have to do with patient care i.e. for a model of nursing education which is distinct from the medical model which has dominated the nursing curriculum for a long time. This would constitute a positive attempt to counter-balance what McCarthy (1972) called the 'over-reliance on the medical profession for the teaching of nurses' and a system which he described as 'ineffective, inefficient and, in some ways, harmful to the progress of nursing.' This view, from a surgeon interested in the education of nurses, deserves serious consideration in any discussion of the role of the life sciences in nursing education. For what he and many others have argued is that the model for nurse education should be one based on 'care,' and that much of the teaching should be in the hands of nurses with this orientation (see below).

5.3 A model of nursing for nursing education.

A number of theoretical models in nursing have been proposed, based on a distinctive ethos of 'care' recognised as being within the professional sphere of nursing intervention. For instance, King (1971) proposes a theory of goal-attainment within a dynamic interacting system involving clients and nurses. Within this system, both the client and the nurse are engaged in a process of interaction designed to achieve a common goal which she describes as 'attaining, maintaining and restoring health.'

For King, this mutual goal-setting depends initially on the ability of the nurse to assess the client's needs as reflected in the problems identified by the nurse. In order to assess these needs, this theoretical proposal suggests that a nurse would need a knowledge base in order to engage in a purposeful communication with the client.

In much the same way, Orem (1980), proposes the 'self-care' theory within three specific areas of nurse-patient interactions. The three areas within this framework are described as:

- a) A wholly compensatory system in which the nurse assesses, plans and provides care for the individual's total care needs e.g. an unconscious patient.
- b) A partially compensatory system in which, unlike

(a) above, the patient is assisted by the nurse to accomplish part of his self-care needs - e.g. patients with gastro-enteritis or orthopaedic trauma. In these patients, the nurse would be expected to assist the individual with the performance of self-care activities.

c) Supportive-educative system when the nurse supports or educates the individual in overcoming self-care deficits. This could be the area of patient teaching e.g. in teaching patients how to use crutches for walking or to change surgical dressings at home or administer insulin injection for diabetes.

The adaptation model proposed by Roy (1970; 1976) on the other hand, provides a framework for nursing intervention in relation to total individual needs. For Roy, man is viewed as a bio-psycho-social being constantly adapting to changing biological, psychological and social environments. She describes three modes for this ability to adapt as:

a) Physiological mode in which the maintenance of the biological integrity of the individual is involved.

b) Self-concept mode which involves the maintenance of psychological integrity of the individual.

c) Role function mode - this is the social aspect of the model and deals with the maintenance of the individual's social relations and their contexts.

More recently, a number of variations on these central theoretical themes have emerged in the literature. Thus Roper, Logan and Tierney (1980; 1981) propose a model of care based on the 'activities of living' (ALs). These comprise:

- a) Maintenance of a safe environment.
- b) Communicating.
- c) Breathing.
- d) Eating and drinking.
- e) Eliminating.
- f) Personal cleansing and dressing.
- g) Controlling body temperature.
- h) Mobilising.
- i) Working and playing.
- j) Expression of sexuality.
- k) Sleeping.
- l) Dying.

The model incorporates the notion of a 'process of nursing' which, for all practical purposes, has the same characteristics as the 'nursing process' i.e. a problem-solving approach to the delivery of nursing care.

The activities of living involve the bio-psycho-social aspects of life and are therefore within the overall concern of general theory-building in nursing (Kim 1983; Walker & Avant 1983). More importantly in relation to this thesis is the evidence that all the above theorists see (a) the need

for a knowledge base in the biological, behavioural and social sciences as a central issue in their proposals and (b) one that would determine the ability of the nurse to provide safe, professional care for clients and patients.

Nursing models, such as these, with their emphasis on patients' problems and the help required to cope with activities of living (Roper et al 1980), are currently being used as the basis for the introduction of the nursing process in curriculum development in the United Kingdom (Hargreaves 1975; Kratz 1979; de la Cuesta 1983). The specific application of the nursing process within a nursing theoretical framework has been considered by a number of authors in recent years (McFarlane 1976; Altschul 1979; Hall 1980; Clough 1981).

These authors argue that an appropriate knowledge base is important although learners are in general taught correct attitudes and encouraged to adopt those demonstrated by the trained staff. With regard to the teaching, learning and application of the life sciences in nursing education, it would seem important that the life sciences basis of learners' knowledge for practice should be clearly defined, structured and organised progressively throughout their training.

As Greaves (1979) noted:

Knowledge is much more than its components of facts, details, information and the like. It concerns also the ability to interpret, perceive, integrate, discriminate, evaluate and apply to changing situations. In this respect, knowledge must have meaning and be capable of application by the students in order to meet specific needs of patients in the clinical setting.

The introduction of nursing models in recent years has encouraged the replacement of much of the current medically-orientated input of knowledge generally. This trend, described by Peterson (1983) as: 'General progression away from the medical systems model to a conceptual, nursing-care-process model' (p93), has characterised curriculum design in nursing education in the past decade. However, it could be argued that the effect of such changes may not lead to fundamental changes in nursing unless new approaches are adopted in relation to the teaching and learning of the behavioural and life sciences.

Figure 5:1

The distinguishing features of medical and nursing models

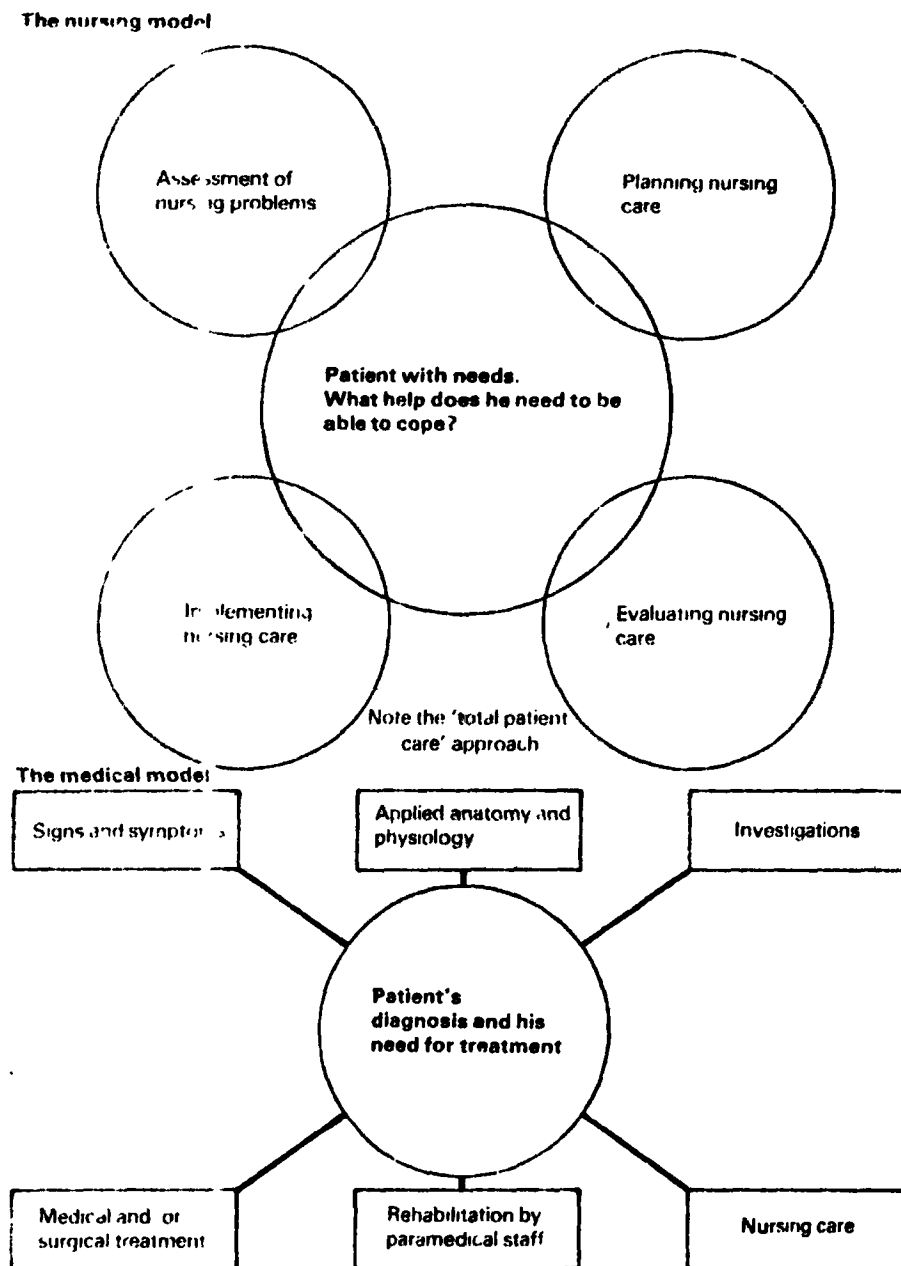


Figure 5:1 shows the distinguishing features of the two models in use in medical and nursing education. The medical model emphasises signs and symptoms in relation to pathology while the nursing model summarises a problem-solving approach which is recognised as the nursing process and which Roper et

al (1980) term 'the process of nursing.'

An example may help to clarify the distinction between medical and nursing models. A basic assumption in medical and nursing curricula is that both medical and nurse learners need to have a clear understanding of the basic principles of fluid balance and its control, so that they will understand the reasons for their respective forms of interventions. However, additional knowledge needs are not identical and knowledge input, both theoretical and practical, should therefore have differing foci, emphases and levels of detail (Ellis 1982). For the doctor, knowledge input is geared towards effective diagnosis and prescription, and a great deal of detail is necessary. For the nurse, however, understanding of the basic principles of homeostasis in general and of fluid balance in particular, and knowledge of the manifestations of fluid imbalance in practice, would be determined by the application of these principles in nursing care. For example, while carrying out the monitoring of fluid intake and output and the administration of intravenous infusion.

It could be argued that a nursing model based on the concept of 'care' will be centrally concerned with the tasks performed by nurses - skills and techniques, the reasons for the performance of which may lie in one or both of the life and behavioural sciences (Roper et al 1980; Greaves 1979; Baldwin 1983; Akinsanya 1984).

The focus in this study is solely on the life sciences component, although similar considerations might apply to the behavioural sciences as well. In the area of the life sciences, this thesis has argued that a 'bionursing' approach might be proposed which would be concerned with the essential aspects of patient care based on knowledge directly derived from the life sciences. This would contrast with the existing 'biomedical' approach in which the emphasis is on pathology and medical diagnosis. Such a 'bionursing' orientation might have, as a pivotal innovation, the linking of the tasks which constitute nursing care i.e. the skills and techniques, and any situation-specific modifications, with a distinctively derived knowledge base in the life sciences. As Chinn (1983) points out:

..there needs to be an increasingly clear commitment to the development of knowledge that reflects prevailing views of the discipline (nursing) and to the testing of nursing concepts and theoretical formulations. The need to conceive and implement new approaches for the testing of nursing knowledge is critical; the nature of the concepts of the discipline and the lack of existing means to verify or validate phenomena that are important to the practice of nursing are a major challenge for the community of nurse researchers (p 402).

A major concern of this study is the exploration of ideas in order to provide a conceptual link between nursing and the life sciences. It is therefore suggested that a 'bionursing' focus could well provide a rational, structured and scientific basis for curriculum development in the professional education of the nurse. The acceptability or otherwise of a 'bionursing' focus in nursing education may, in the final analysis, depend upon:

1. The nature and level of specific aspects of the basic sciences which nurse learners would need to master, with understanding, in order to perform basic and technical nursing procedures.
2. Clinical application of life sciences concepts which underpin the theory of nursing - the mastery of these concepts and the way in which they would enable the learner to demonstrate effective transfer of learning.
3. Organisation of knowledge of facts, principles and theories of nursing derivable from the life sciences and capable of transfer in learners, given their different educational backgrounds.
4. The learner's ability to comprehend, apply, analyse, synthesise and evaluate nursing practice on an individual basis related to well-defined task characteristics, as defined above; for example, care of pressure areas, oral hygiene and feeding of patients.

However, a great deal of research, curriculum innovation and evaluation will be needed if a such a 'bionursing' proposal for the teaching and learning of the life sciences in nurse education is to be achieved. This would apply, not only to the education of learners, but perhaps with greater emphasis, to the preparation of nurse teachers. Nevertheless, it would seem that the first step may lie in the identification and categorisation of nursing tasks in relation to (i) the development of professional competence (ii) the nature of the

life sciences underpinning of such tasks - treated in broad terms. For example, Figure 5:2 shows the breakdown of a nursing procedure of intravenous infusion in terms of its underlying scientific principles upon which safe practice would depend. Since this procedure is concerned with fluid and electrolyte balance (for whatever medical reasons such a procedure is undertaken), it would seem important for safe practice that the nurse should understand the scientific basis for medical intervention for informed practice. Thus a knowledge of the basic sciences i.e. biology, chemistry and physics are appropriate pre-requisites to the learning and application of the biological/life sciences in nursing and medical education. This is because the study of physiology and biochemistry, and their application to nursing practice, depend crucially on a background knowledge of these basic sciences. (The analysis of different levels of tasks used by the author is described below and applied in Chapter VI. A modified version is used in chapter VIII).

Figure 5:2

The Implied Knowledge of the Life Sciences in Nursing
Procedures: Setting Up Intravenous Infusion

Basic Sciences		Life Sciences Topics	Application to nursing
Biology/Chemistry	Fluids/Electrolytes	Type of IV*	fluid
Biology/Physics	Circulation of blood	Monitoring pulse rate	
Biology/Chemistry			
/Physics	Body metabolism	Nutritive value of fluids	

*Intravenous Infusion

As can be seen in Figure 5:2, there is an important theoretical and practical relationship between basic and life sciences and the management of an intravenous infusion. As the study of nurse-patient verbal interactions by Macleod Clark (1982) indicates, tasks most frequently associated with instances of nurse-patient communication have considerable life-sciences knowledge underpinning. Amongst these instances reported by Macleod Clark are: intravenous infusion, fluid balance, administration of drugs, temperature, pulse and respiration, administration of injections, bowel care, admission and serving food. These are areas in which the study of anatomy, physiology, microbiology and pharmacology would play an important role in the nursing management of patients' problems.

5.4 Nursing and the life sciences

From the discussions above, it would seem that the problem for nurse educators centres on the need to develop a teaching/learning approach which progressively enables learners to perform the nursing process with meticulous attention to detail and yet be adaptive in response to individual patient's needs. This would imply the need for a theoretical framework, based on the concept of 'care', which would have regard for the gradual development of professional responsibility during training.

What, then is the nature of the life sciences knowledge required for professional practice by nurses? It has been

argued (Chapter II) that a theoretical framework based upon the 'quality' of care (however that may be defined), is likely to remain elusive, and that a focus on the tasks which constitute nursing care might well provide a more fruitful starting point (see, for example, Bendall 1973; Inman 1975).

For educational purposes and specifically in relation to the biological sciences, Wilson (1975) has suggested that the competent performance of nursing tasks makes varying demands on the level and depth of understanding of these subjects that can be expected of learners and trained staff. However, there is no evidence in the literature reviewed of any clear picture as to what these tasks are.

Nursing has sometimes been viewed as a predominantly sensory-motor activity (Holmes 1972). In order to be a skilled practitioner, however, the learner would need to be assisted in the development of appropriate skills (MacFarlane and Castledine 1982). The most appropriate way in which such skill development can be achieved by the learner has been an area of intense research activity in education generally. Two theories proposed in the last two decades are particularly relevant to the present study. The first of these is that of Fitts (1965), described as a 'three-phase theory.' Fitts suggests that the performance of tasks is characterised by three phases which overlap continuously but are capable of theoretical delineation. These are defined as:

- a) The cognitive phase - involving the analyses of

tasks.

b) The associative phase - when correct patterns of response are developed through practice by the learner.

c) The autonomous phase - when tasks are performed skilfully and automatically.

These phases may be concurrent or successive during the performance of tasks but the learner's ability to perform tasks accurately with speed is considered to increase even under stressful conditions. This would seem to be an important consideration for a practice discipline such as nursing where much of the tasks to be performed may be routine and repetitive. The essence of skilled performance under these circumstances is the elimination of errors. However, teaching nursing skills may present problems unless the psychomotor-skill-learning implications are carefully considered. As Hardy,(1980) points out:

Nursing standards demand ease and accuracy, flexibility versus mere habit, and voluntary movements which demonstrate that the student is reacting to his environment by modifying his actions. This can have grave reference to safety in patient care.

The second approach uses the technique of task analysis in terms of component skills and knowledge (Annett 1971; Demaree 1961; Edney 1972). Demaree, for example, considers that skill acquisition depends on four categories of teaching/learning requirements. These are categorised as:

1. The learning of knowledge related to the task i.e. terms, concepts, principles and their relationships in practice.

2. The learning skills and their related tasks in order to make decisions about appropriateness, accuracy and necessity for their performance in specific instances.

3. The learning and mastery of whole-task performance involving procedures, contexts of performance and the complexity of decisions that have to be made.

4. The learning and mastery of integrated-task performance when tasks have to be co-ordinated within an overall teaching approach.

Drawing upon Fitts's and Demaree's approaches and concerned (i) with the importance of the nurse's understanding of the reasons for every action (more than mere knowledge of the reasons) and (ii) with the progressive development of professional responsibility through a more conscious linking of theory with practice in nurse education, the author proposes four levels of task performance, reflecting the successive depths of knowledge and understanding of the life sciences upon which skilled performance in nursing care might depend. These are:

1. Task operational (TO) level in which the activities performed by nurses do not require a specified level or depth of knowledge and understanding of the life sciences. It is suggested that this area of nursing is that in which the untrained (auxiliaries, aides and orderlies) are expected to function. For example, such activities as damp dusting, cleaning lockers and bed tables and generally assisting in the maintenance of a clean environment for the patient are largely at this level of task performance in nursing.

The TO level corresponds to those categories of nursing action which are dependent on manual skills in order to give physical help and assistance to the patient (McFarlane & Castledine 1982).

2. Task specific (TS) is defined by the author as the level which requires that the nurse has an understanding of basic life sciences concepts, terms and principles in order to carry out particular nursing activities. It is considered an area in which learners (both pupils and students) are expected to be equally proficient in taking responsibility for observing patients' condition, reporting their observations accurately e.g. taking and recording temperature, measuring blood pressure and assessing general patient well-being.

3.Task contextual (TC) level. At this level, the depth of knowledge of the life sciences, it is argued, becomes detailed and its application all-embracing. Activities at this level are viewed as those which involve decision-making on the part of the nurse in which precise knowledge of the life sciences is crucial to the patients' safety and well-being. These activities are shared in part by student and pupil nurses as learners, but the latter would almost invariably concentrate on the practical aspects of their application. Examples of these activities have been noted by a number of authors (Alexander 1982; Gott 1982). For example, administration of drugs, initiating nursing procedures and assisting with medical and surgical procedures.

4. The fourth level of definition of nursing tasks proposed in this thesis is that of professional and personal development (PPD). This represents the stage reached at enrolment and registration. The knowledge of the life sciences at this level would be considered as being commensurate with the responsibility of initial enrolment or registration by the qualified nurse. Nursing activities at this level will be wide-ranging, involving basic and technical skills and reflecting a satisfactory knowledge base from which the individual can proceed to post-enrolment or post-registration

courses on the basis of the foundations laid at this level.

It should be noted that Fitts's 'autonomous phase' and Demaree's categories (3) and (4) correspond to the TC and PPD levels as defined in this thesis. It seems reasonable to suggest that (i) a theoretical input determined on a model of 'care' and (ii) the progressive linking of this input with its application in practice as and when new demands are made on the nurse and her experience grows, might provide a distinctive nursing approach to the teaching and learning of the life sciences, termed 'bionursing' in this study. It might also go some way towards developing the professional responsibility upon which the quality of care might ultimately depend.

Figure 5:3

Biological/life sciences input in nursing education, their
depth and level during training

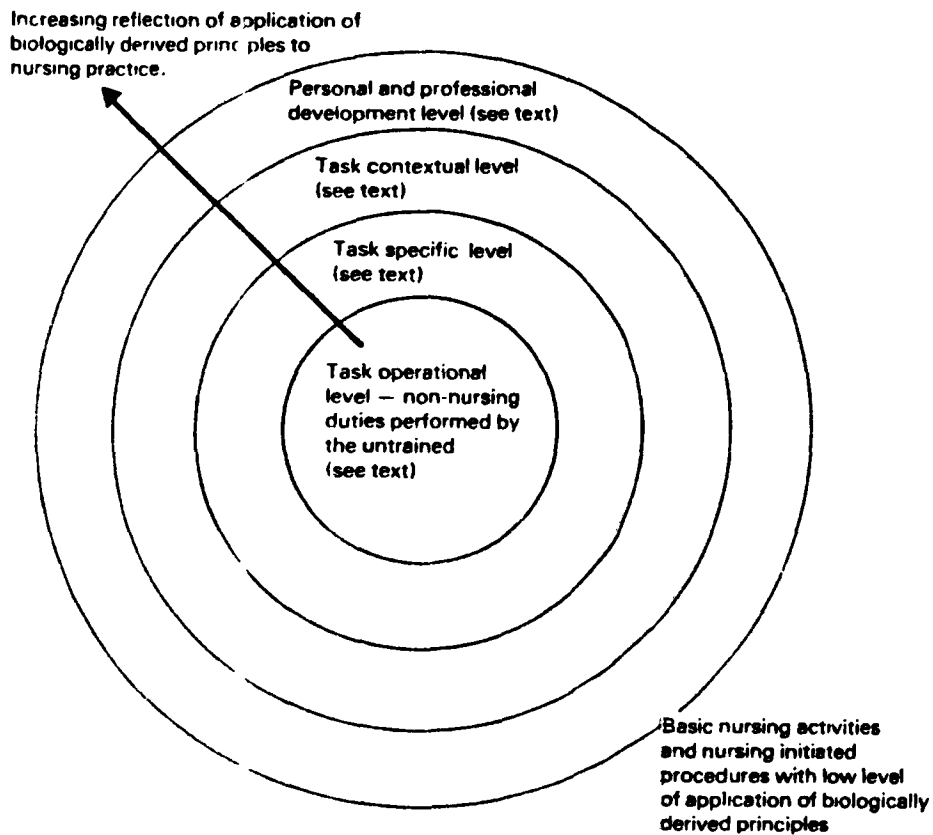
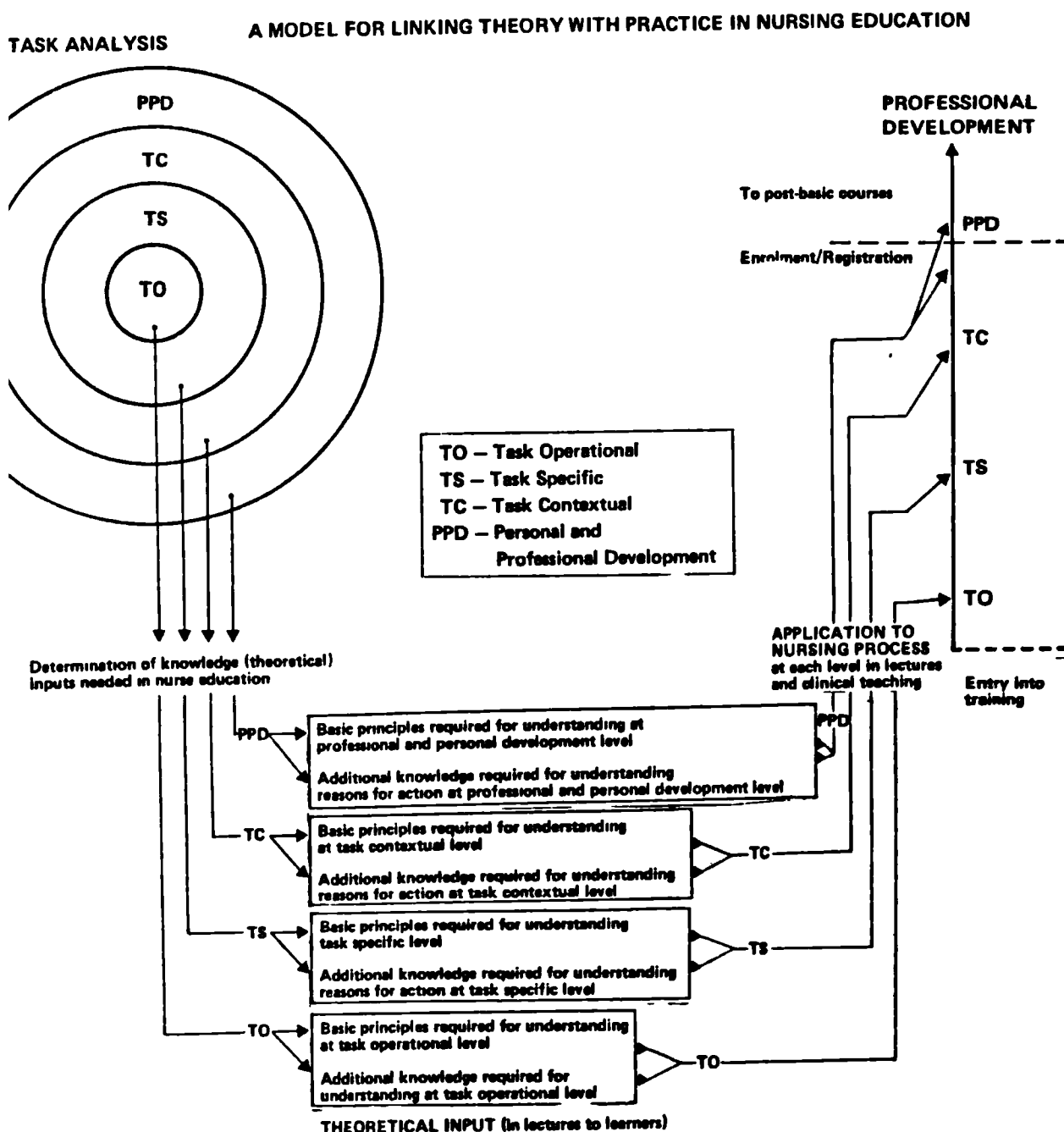


Figure 5:3 shows the model of nursing activities (tasks) developed for this study to show the need for specified knowledge of the life sciences. These subjects, defined as anatomy, physiology, microbiology and pharmacology, represent an essential aspect of the education of members of the health

care team, but they are not the sole preserve of any one professional group. It should be noted that 'tasks' as used in this discussion do not refer to the notion of 'task-centred' as opposed to 'patient-centred approach to nursing care. It is concerned with the analysis of the knowledge required by the nurse in order to perform specific nursing tasks. Figure 5:4 below illustrates the way in which it is suggested theory and practice might be linked to nursing using a 'caring' model based on task hierarchies as described in Figure 5:3.

Figure 5:4



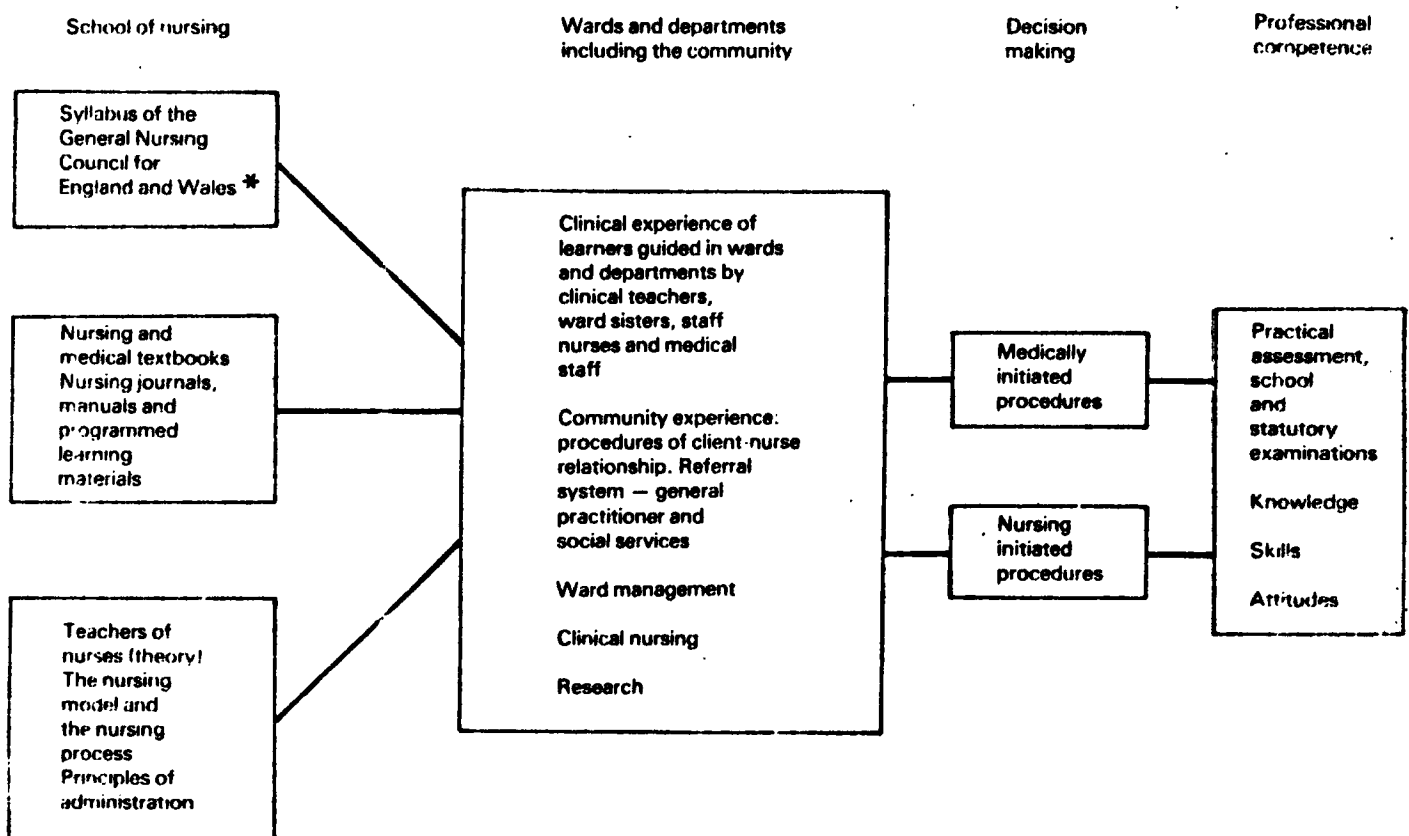
*Note that feedback and modifications would be part of a continuing process in curriculum development based on this Model.

5.5 Developing a bionursing link

How does this bionursing approach fit into a nursing model for the input of the life sciences in nursing curricula? Figure 5:5 shows the current model of nursing education through the school and clinical areas in England and Wales.

Figure 5:5

A model of nursing through the schools and clinical areas



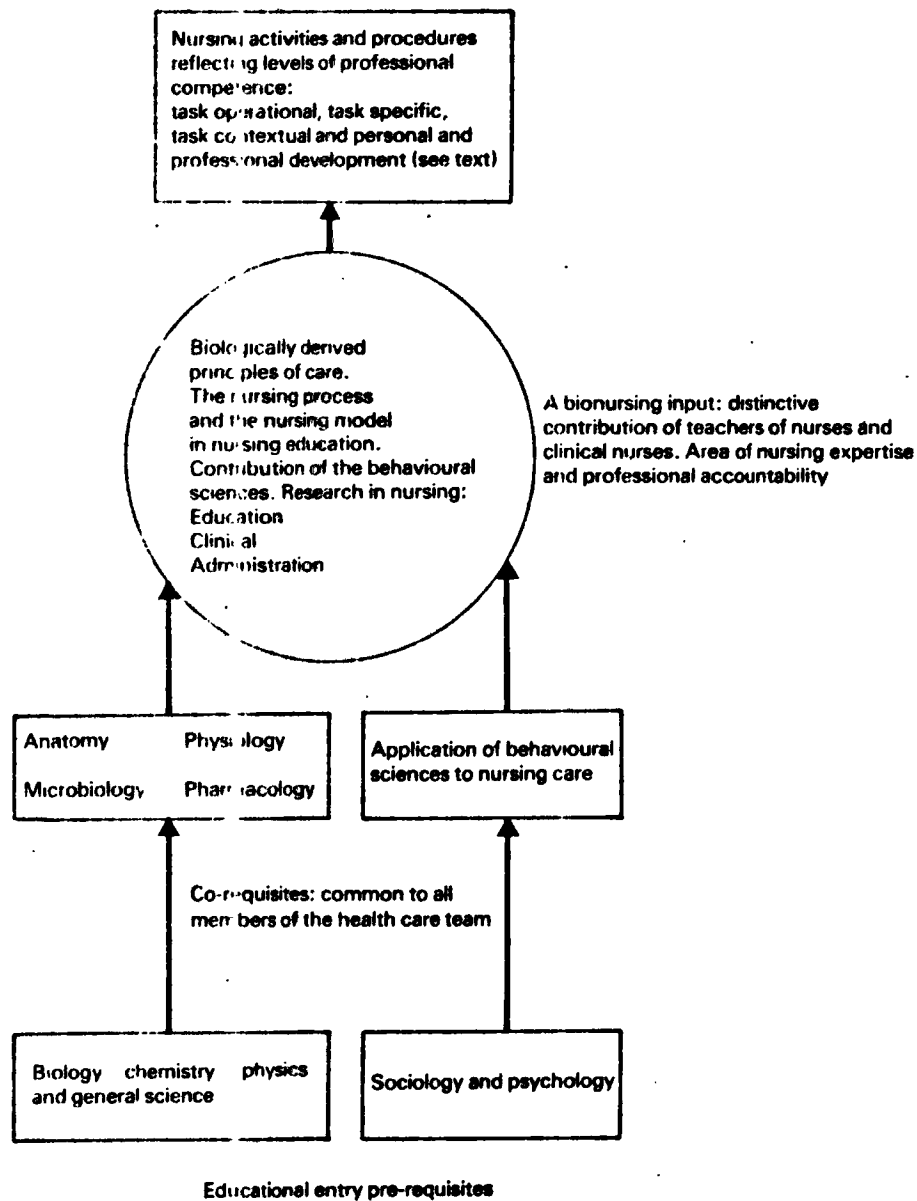
* Now ENB and WNB (see abbreviations Appendix 13)

It will be seen in Figure 5:5 that the education and training of the nurse involves a wide range of human and other resources within and outside the hospital as a training institution. The need for a knowledge-based decision-making and the development of professional competence, it is argued, are the major concerns of the statutory bodies (UKCC, ENB and WNB) and the training institutions (Bendall & Raybould, 1969; Allan & Jolley, 1982).

Figure 5:6 shows the model of nursing education which, this thesis argues, focuses on the relationship between basic educational background of learners and their later study of the nursing syllabus. In this model, educational entry background into nursing would be the same as for those in other health professions because such a background provides the basic scientific knowledge derived from subjects such as biology, chemistry, physics and general science. The life sciences are also shown as being common to all health professionals but the specific uses of these sciences in nursing might be different in orientation from medicine and other courses. It is this aspect that is described as a bionursing input and an area in which teachers and other professional nurses might be regarded as the experts. The knowledge derived from this aspect could then be used according to the type of task being performed - see description of task analysis above.

Figure 5:6

A model of nursing education and its scientific foundation



This study is not concerned with the level to which these subjects are studied by prospective nurses, although these or equivalent levels of knowledge are held to represent

important pre-requisites to a career in nursing. (This can be argued on the basis of learning theory and concept hierarchies, whether one subscribes to the views of such theorists as Gagne'(1970) or as Ausubel (1968). The former argues that learning proceeds from specific to the general while the latter advocates that learning should proceed from the general to the specific in order to be effective).

Within this context, the empirical studies which follow represent an attempt to determine the extent to which a life sciences basis for nursing practice and nurse education might be defined and subsequently explored.

The aims of the study can now be stated as follows:-

- 1.To describe learners' perceptions of the role of the life sciences in their education and training for professional practice.
2. To seek evidence for the preparation of nurse tutors in the knowledge they require in order to teach the application of the life sciences.
3. To ascertain the perceptions of nurse tutor students and their course directors on the role and relevance of the life sciences in nursing care and in the preparation of nurse tutors, and on the effectiveness of present courses in equipping nurse tutors for teaching the application of life science knowledge in nursing practice in such a way as to link theory with practice by providing understanding of the reasons for actions.
4. To ascertain nurses' views on whether the

introduction of a bionursing conceptual framework (instead of the existing medical one) would help to provide a direct link between nursing and its life sciences foundation.

5. To test the researcher's model of task hierarchy/life science input.

6. To supplement the growing literature on the contribution of the life sciences in nursing education and the need for a clearer definition on their application to its practice.

7. To identify and clarify issues for further research.

Because of the dearth of research in this area, the research programme was necessarily evolutionary in its development. In Stage I, an exploratory study (described in Chapter VI), involved attempts to develop an appropriate strategy for the later empirical study. This resulted in the development of a questionnaire for learners, designed:

1. to canvass the views of learners on their perceived usefulness of the concept of 'bionursing' for examining the input of the life sciences in nursing education and relating these to nursing practice;

2. to explore the perceived depth and levels of knowledge of these subjects required for specific nursing activities and procedures (which might also act as a test of the hierarchy model in this study);

3. to assess the reactions of learners at various stages of basic general training to the term 'bionursing' as a description of the application of knowledge derived from the biological/life sciences in nursing education and practice.

165 volunteer learners in 2 teaching and 1 non-teaching hospitals in South East England participated. This study is reported in Chapter VIII. The evidence from this study suggested tentatively that a major root of the problem of life sciences in nursing education might lie in the way tutors and clinical teachers are prepared, and how they view their role as teachers using knowledge derived from the life sciences (something which had been mentioned by nurse tutors and clinical teachers during preliminary discussions.)

Consequently, it was decided to survey by means of questionnaire, the opinions of nurse tutor students (n=324) on the role and teaching of the application of the life sciences in the practice of nursing, their perception of their preparation for teaching in this area, as well as difficulties and anxieties which they experience. This constitutes Part A of Stage II of the study (n=324) and is reported in Chapter IX. In Part B of Stage II, 12 directors of nurse tutor courses were also interviewed on the role and teaching of the application of the life sciences in nursing and the preparation of nurse tutor students; the effectiveness of the preparation at present, and future plans. This would afford, it was hoped, valuable expert

opinion in relation to the three areas identified in the learner study, and to the training of nurse tutors. This is reported in Chapter X.

Since general methodological considerations apply to all three main studies, these are dealt with in Chapter VII. Specific considerations are discussed in the relevant chapters dealing with each stage (VIII, IX & X).

At all times, it was made clear that the purpose of the study was not to polarise medicine and nursing as professions, but an attempt to see to what extent a distinctive life sciences basis for nursing could be defined. For it was hoped that a bionursing focus, as proposed in this thesis, might provide a rational, structured and systematic scientific basis for curriculum planning and development and for the professional education of learners in the life sciences. Above all, it is hoped that learners taught to use a 'bionursing' focus for the application of the life sciences to nursing care, would be encouraged to adopt a problem-solving approach and that this study might provide a modest first step in this direction.

CHAPTER SIX

CHAPTER OUTLINE

PART II

THE THEORETICAL FRAMEWORK AND THE EMPIRICAL STUDY

CHAPTER VI

PRELIMINARY EXPLORATORY STUDIES

(STAGE I)

- 6.1 Introduction
- 6.2 Preliminary decision-making
- 6.3 The Observation Study
- 6.4 Preliminary arrangement
 - 6.32 The sample
 - 6.33 The wards used in the study
 - 6.34 The procedure for data collection
 - 6.35 Data Analysis and Findings
 - 6.36 Discussion
- 6.4 Group discussion with learners
 - 6.41 The sample
 - 6.42 Procedures
 - 6.43 Data Analysis and Findings
 - 6.44 Discussion of findings
- 6.5 Decision-making arising from the exploratory studies

CHAPTER VI

PRELIMINARY EXPLORATORY STUDIES (DEVELOPMENTAL STAGE I)

6.1 Introduction

From the literature survey, it appears that:

1. New recruits to nursing continue to present problems of varied educational backgrounds but are increasingly better qualified (GNC Statistics 1980)
 2. The learning and use of the life sciences during training remain problematical and without satisfactory structure
 3. Teachers of nurses are perhaps themselves experiencing difficulties because of the way their preparation seems to lack a coherent curricular approach to the teaching and learning of the life sciences.
 4. Course directors responsible for the preparation of teachers of nurses appear to be in a dilemma in that the length of the course (1 year full-time or 2 year part-time) allows for a methods only approach which therefore rules out the formal input of courses in the life sciences. This limitation is important because the possession of the Diploma in Nursing, regarded as a preparation for these courses, is not a pre-requisite for admission to nurse tutor courses.
- It has also been argued that a 'bionursing' focus in the teaching and learning of the life sciences in nurse education could provide a shift in the knowledge base of nursing. A model has been proposed in Chapter V which, it was argued, might provide an approach to task analysis from which

learning hierarchies might be developed for curriculum planning.

Preliminary empirical studies were carried out as the writer explored ways of investigating the role of the life sciences:-

a) At an early stage, an attempt was made to devise a 'Science Test' which could be used to provide indications of learners' familiarity with, and grasp of, basic vocabulary in the underlying sciences of biology, chemistry, physics, psychology and sociology on entry. (Appendix 1). When related to qualifications/experience on entry (e.g. possession or otherwise of Certificate of Secondary Education, Ordinary Level or Advanced Level passes of the General Certificate of Education (GCE) in the basic sciences), and the results in the final State Registration Examination, the result might go some way towards providing clues about:-

i) the importance or otherwise of initial knowledge of these sciences in relation to success in the final examination. (A study by Wilson (1975) reported a lack of correlation between school attainment and the ability of nurse learners to perform well in professional examinations).

ii) possible sources of difficulty in

understanding the life sciences and their application to the practice of nursing.

iii) remedial action on entry and, perhaps, at other appropriate points in the course of training for State Registration.

A pilot run was made which showed that, for all subjects, the grasp of the vocabulary in the sciences was very low (during introductory block), but improved by the third year block (Appendixes 1,1a and 1b). However, further exploration of learners' familiarities with scientific terminologies was postponed. This was because it was becoming clear that this research (while of potential significance for the life sciences input), was by now peripheral to the emerging focus of the study.

b) Observation in the wards was undertaken with a view to:-

- i) identifying nursing tasks for categorisation in terms of the model developed for this study (Chapter V).
- ii) studying new entrants' involvement in ward activities classified according to the model.

The main area of interest in these preliminary explorations was the categorisation of the life sciences input in relation to nursing tasks, and the extent to which this was made clear or at least understood in each case as an important reason for the different aspects of each task (see Figure 5:2 p)

c) A tape-recorded semi-structured exploratory discussion was held with third year learners i.e. from a non-teaching hospital, about the appropriateness of a 'bionursing' model for the use of the life sciences in nurse education. The importance of understanding of the life sciences in different nursing tasks, and difficulties experienced in understanding and applying their knowledge in this area were also explored. Data here were to be analysed and related to the proposed theoretical model (page 115).

6.2 Preliminary decision-making

Decisions had to be made with regard to the learner population (i.e. from non-teaching as against teaching hospitals). For two major reasons, it was decided to delay the inclusion of teaching hospitals to the main study, which would involve learners from both types of institution. The first is that, generally, the educational qualifications with which learners enter nurse training in teaching hospitals have been reported to be higher than for those entering non-teaching hospitals (Straw 1981). This has important bearing on the problem of understanding and application of the life sciences by learners in clinical practice. The second reason concerned the clinical experiences of learners. A number of studies have reported some differences in the learning experiences between teaching and non-teaching

hospitals. For instance, the study by Fretwell (1979) examined the issue of whether there were 'good' ward learning environments. She suggests that the hierarchical model of nursing which would seem to be more pronounced in teaching hospitals, could inhibit learning. The teaching hospital school of nursing, with close links with a medical school and the sharing of training facilities with medical students and other paramedical students, clearly has a different set of problems compared with the non-teaching hospital school of nursing. Thus this stage of the study focused on the contribution of the life sciences to nursing practice as perceived by learners with mixed educational backgrounds in a non-teaching hospital.

6.3 The Observation Study

Three tentative research questions provided the rationale for this part of the preliminary study:-

- i) What nursing tasks do learners perform or take part in during the early stages of their training?

- ii) What knowledge of the life sciences is perceived by learners as necessary for an understanding of the tasks they are required to perform or assist with during the early stages of their training?

- iii) To what extent is this knowledge of the life sciences made explicit to learners during ward activities?

It was realised that in earlier studies (Bendall 1975; Wilson 1975; Moores and Moulton, 1979), extensive ward observations were undertaken which resulted in a comprehensive listing of ward activities in medical and surgical wards. The rich data from these and other studies (see, for example, Roper's 1976 Scottish study) cover the same ground as that in the proposed observation study. Because of this, the possibility of undertaking a secondary analysis of the data with the permission of the previous researchers was considered. Moores and Moulton (1979) used trained observers whose collected data were analysed in terms of types of nursing i.e. whether basic or technical (as defined by Goddard 1963). In the case of Wilson's (1975) study, observations of nursing activities were recorded and subsequently analysed by the researcher. The resulting data were examined in terms of the background 'biological' or life sciences knowledge required for the performance of the observed tasks. The method used in both cases was that of non-participant observation.

The author was, however, particularly concerned about the extent to which newly recruited learners connected the life sciences being learned in the school with practice in carrying out or assisting with nursing tasks on the wards. It was therefore decided to explore the possibility of using ward observation as an extension of this exploratory stage of the study. It was recognised that such an exercise would have a limited use unless it was carried out over a longer period than was envisaged (i.e. three full days) but it was

essential to explore the usefulness and/or appropriateness of this line of approach.

6.31 Preliminary arrangements

An arrangement was made with the hospital authorities in the non-teaching hospital that the researcher would spend three days in the hospital for observation of ward activities (Appendix 2). One day (during normal daily shift) would be spent on each of three wards in which learners from the introductory block spent a day a week during their course. Permission to undertake the ward observations was granted by the senior nursing officer and an arrangement was made for sisters from the relevant wards to be briefed by the researcher. A handout was prepared for this purpose, setting out the introduction to the study (Appendix 3). The ward sisters attended a meeting in the administrative office of the hospital and were duly briefed by the researcher. The purpose of the study had been discussed in detail with the senior nursing officer who had given permission for the sisters to attend the meeting. At the formal meeting with the researcher, the prepared handout formed the basis of a discussion with the four sisters in attendance. Questions about the study were answered and it was pointed out that the study aimed to observe the activities in which recently recruited learners were involved during the weekly ward allocation.

The sisters welcomed the opportunity to help with the study and three of the four agreed to participate. The fourth sister from the outpatients' department felt that the nature of nursing duties undertaken there would not provide much helpful information on the issues being addressed by the study. Accordingly, it was decided that observation would take place on one surgical and two medical wards. A problem which the sisters raised was that of the role of the observer in the wards. It was agreed that this should not be overtly participatory but that if a situation arose in which participation might be necessary, the decision should be made in the light of that requirement.

Before discussing the method of data collection, much thought was given to the problem of possible participation in view of the need for observer reliability and the nature of the data to be collected. With regard to the first, a number of authors have noted methodological difficulties inherent in the participant as an observer (Moser and Kalton 1977; Robertson 1982).

In an earlier study of nurse learners, Bendall (1975) points out that real life observations are time-consuming and provide the researcher with little return in demonstrable data. The issue of importance in this discussion is that of observer bias and is of two kinds. The first of these is defined by physical constraints. An observer can only be in one place at a time and thus misses, of necessity, events occurring simultaneously elsewhere. The second relates to an

interactionist standpoint in that, having set a definite objective as to what he wishes to look for, an observer is forced to exclude other aspects of the event occurring before him.

Nevertheless, an observation is an event to be recorded and Becker (1971) considers that a framework must be planned if the researcher is to obtain satisfactory result from this method of study. This is particularly important where participant observation is involved and Becker advocates a sequential analysis of data while the researcher is in the field. This would consist of three steps initially:-

1. Selection and definition of problems, concepts and indices.
2. Check on the frequency of distribution of observed phenomena.
3. Incorporation of individual findings into an overall picture of the observed phenomena.

This approach seemed suitable for the purposes of the present study. However, it was anticipated that sequential analysis while in the field might prove difficult and a modification of the method would be necessary.

The kind of information required can be summarised in the following way:

Which specific life science do learners at an early stage of their training perceive as contributing a background

knowledge in carrying out or assist senior learners and qualified staff with specific nursing procedures? The procedures themselves were not of immediate concern to the researcher for a secondary analysis of the data obtained by Moores and Moulton (1979) or Wilson (1975) would, as noted above, provide considerable and detailed information about the various nursing tasks and procedures involving learners in the clinical areas under study. It was realised that a separate observation by the researcher of these activities could neither match the large samples involved in the above studies nor generate enough data for statistically valid results. It was rather that, given the small sample of learners (n=5), it was possible for the observer to have closer opportunities to explore what might be explicit and implicit uses of the life sciences in the performance of some ward activities which involved learners under observation. Bendall (1975) reported that an observer in situations where learners are carrying out nursing tasks may be forced to intervene (and therefore participate) if the patient's welfare is seen to be at risk.

A number of authors have suggested that when such a participation is required, the researcher might reflect that his very presence directly affects the phenomena under observation (Polit & Hungler 1978). Indeed, Stacey (1969) argues that a degree of participation cannot always be avoided because:

"The observer is where his subjects are but is not one of them and not joining fully (perhaps not at all) in their life."

So, given that the learners were on the wards for their first allocation following introduction to the life sciences in the school, it was decided that any participation by the researcher would be decided as appropriate in the particular instances. It should be noted, however, that where non-participation is a crucial methodological requirement, trained observers should be used e.g. as in the studies by Hawthorn (1974), Hayward (1975) and Moores and Moulton (1979). But these were studies which either involved large groups or used experimental methods in which observer participation and its attendant danger of bias would lead to methodological problems and might invalidate results and findings.

6.32 The sample

This consisted of learners (n=5) who were recently recruited into the non-teaching hospital. The group had participated in the exploratory study (n=28) which involved the use of the 'Science Test'. As part of their general introduction to nursing, the learners had been allocated to the wards on one day a week for the duration of their introductory block of six weeks. Thus the learners were being taught the life sciences in the school during four days and were introduced to clinical practice on one day of the week. It was therefore possible to observe the sample (n=5) in relation to the research questions (i - iii) above during three of their six

weeks introductory block.

6.33 The wards used in the study

It was relatively easy to select wards for observations since an earlier discussion with ward sisters had enabled the researcher to identify three wards to which learners from the group were allocated by the authorities. As sisters from these wards had been briefed, it was decided to include two medical and one surgical wards. This choice was guided by evidence from the literature which suggests that a greater diversity of nursing activities is more prominent in medical wards (Inman 1975; Moores and Moulton 1979; Parkes 1980). Table 6:1 shows the information about the three wards used for the observation.

Table 6:1
Wards in which learners were observed

Type of ward	Sister	S/N+	Learners
Female Surgical	1	1	5*
Male Medical	1	1	3*
Female Medical	1	1	3**

+ Staff Nurse

* Includes two new students

** Includes one new student

6.34 The Procedure for Data Collection

The researcher reported for duty with the early shift and worked through until 4.30 p.m. on each ward. Because each of the wards had a 'work book' in which all procedures to be performed in the day and the individual nurses involved were listed, it was possible to prepare a list of those activities which would involve the learners under observation. The early ward report was taken along with the ward staff during which the ward sister discussed the progress of each patient and any specific medical and nursing problems. At the end of the ward report, the learner concerned was informed of the purpose of the researcher's presence following a previous meeting in the school. Each learner was reminded that the researcher was interested in the life sciences and their uses in practice on the wards. It was pointed out that each learner, having performed or assisted in the performance of a task, would be required to consider which specific life science would have been drawn upon in relation to the task performed.

Following this introductory stage, the researcher entered the wards with the learners and observed them (unobtrusively) as they performed their allocated ward work either individually (e.g. when taking a patient to the bathroom) or by assisting others e.g. helping with bedbaths.

At the end of each procedure/task/activity, the learner was asked to state which particular life science being taught in the school had been considered in relation to the activity observed by the researcher. This was done in an informal

manner and thus allowed each learner to express views about the use of any particular life science. The introduction to these sessions was standardised as follows:-

After a procedure was completed, the learner was invited to the ward dressing room or office (whichever was vacant) and the researcher would say:

You have just given a patient a bedbath (or any other activity observed would be noted). Of the life sciences subjects you are currently studying in the school, which one would you say you needed to know for the task you have just performed?

The ensuing conversations were not recorded verbatim but the learner's identification of the life science used or considered important/essential in the performance of the task was noted. At the end of each daily shift, a report of the day was prepared showing the range of nursing activities observed. The life sciences identified by learners under observation were noted. It should be noted that competence in the performance of tasks was not addressed rather learners' identified use of specific life science knowledge was ascertained by questioning as described above.

6.35 Data Analysis and Findings

The results are presented in Tables 6:2-6:4

Table 6:2
Observed nursing activities on a female surgical ward (n=1)

Key to Life Science Identified by
Learners:-

A & P - Applied Anatomy and Physiology
M - Applied Microbiology
P - Applied Pharmacology

Observed activity	Applied Life Science*
Giving bedbaths	A & P
Care of the mouth (oral hygiene)	M
Care of pressure areas	A & P
Assisting patients to walk	A & P
Assisting with feeding patients	A & P
Washing patients	M
Giving patients enematta	M, A & P
Changing redivac drain+	M, A & P
Removing wound drains+	M, A & P
Wound packing+	M
Testing urine	A & P
Wound dressing	M
Checking wound for infection+	M
Irrigation of wounds+	M
Taking and recording Temperature, pulse, respiration and blood	A & P
Removing sutures from wounds+	M
Spraying wounds with antibiotics+	M
Pressure bandaging of wounds+	M, A & P
Observation of vaginal bleeding	A & P
Insertion of suppositories	A & P
Measurement of wound drainage+	M, A & P
Application of pressure dressing+	M, A & P
Checking and administering drugs+	P, A & P
Preparation for special tests	A & P
Neurological observations	A & P

* As identified by learner in response to the researcher's question (see text)

+ Denotes activities performed by learner under supervision in which she assisted senior students/staff nurses/sisters.

Table 6:3
Observed nursing activities on a male medical ward and a female
medical ward with introductory learners(n=2)

Observed activity	Applied Life Science*
Giving patients bedbath	A & P
Weighing patients	A & P
Care of the mouth	M
Care of pressure areas	A & P
Assisting patients in the bath	A & P
Giving terminal care	A & P
Management of intravenous infusion	M, A & P
Administeration of drugs+	P, A & P
Catheterisation of patients+	M, A & P
Management of bowels	P, A & P
Assisting patients with breathing	A & P
*see above	
+see above	

The above findings would seem to indicate that:-

1. Basic nursing activities dominated much of the work of learners in the medical wards, whereas technical procedures were predominant in the single surgical ward studied.

2. Learners in the early stages of their training were involved in the care of patients over a wide range of nursing procedures from basic care of the mouth to assistance in the technical management of intravenous infusion.

As might be expected, most of each learner's time was spent in assisting, rather than carrying out, the procedures for themselves. They were thus being initiated into some of the simpler aspects of nursing care. Discussion with the learners indicated that they were indeed able to identify specific life sciences as necessary for the performance of those tasks

in which they had been involved during the periods of observation. Whether or not they understood why and how that knowledge was being applied is, of course, another matter. This would have called for sensitive probing in a full-scale study but it was not explored here. At no time were learners observed to being given the reasons for the action which constituted any task, thus the theory/practice link was left implicit.

6.36 Discussion

The aim of the ward observations was to collect, at first hand, information on nursing activities regularly performed or in which learners participated early in their training. It was hoped that since the introductory block experience represented a common point of initial acquaintance with the life sciences, it might be possible to obtain information on learners' range of nursing experience.

The question sometimes addressed in nursing is that of the relevance of a particular item of knowledge to its practice (McFarlane 1977). In the case of the life sciences, there appears to be a general agreement about their importance as sources of knowledge to the nurse. As this thesis argues in Chapter V, a major difficulty is experienced in attempts to define their levels for professional training and subsequent practice. Moreover, it could be argued that the teaching of these subjects is either simplified to the point of inaccuracy or is too high-powered and therefore puzzling to learners (McCarthy 1972; Heasman 1981). More important still, the relevance of the knowledge to the task in hand is seldom

made explicit in clinical teaching so that theoretical knowledge and practice are likely to remain separated in their conceptual structure. Bendall's (1973) study and the recent one by Alexander (1983) on the problems encountered by nurse educators in attempts to integrate theory and practice lend support to this point of view.

It could also be argued that hospitalisation (for the individual patient) may be the end result of some body malfunctions and that nursing, in partnership with medicine, is concerned with the efforts to return the body to physical and or/ psychological 'normality'. In this sense, an understanding of what the GNC (1977) describes as the 'body and how it works' may become crucial to the nurse. Certainly, the analysis of the observed activities, using the model developed for this study, would seem to suggest that informed nursing practice (particularly in relation to physical care) depends on a knowledge base derived from the life sciences.

For whether or not such a knowledge is used explicitly or implicitly by the nurse, it would seem reasonable to suggest that the safety of patients depends on an understanding of their problems for informed practice. The above discussion leads, therefore, to the question of how learners at later stages of training view the study of the life sciences in relation to their preparation and later practice.

4 Group discussion with learners

The focus of interest in this part of the study was the contribution of the life sciences to nurse training, as perceived by learners at later stages of their education. To this end, three aspects of the study were addressed:

1. the demands on the life sciences knowledge by specific nursing activities
2. the relevance of the term 'bionursing' as an approach which links the learning and application of the life sciences to nursing care
3. those nursing activities which a nurse could initiate independent of a physician, given a distinctive knowledge base in the appropriate life sciences and ability to understand their application to the theory and practice of nursing

In order to explore these matters further, it was decided to canvass the views of learners at or near the end of their basic training. At this preliminary stage, it was decided that a flexible format which allowed for the expression of wide-ranging views by the learners would be both appropriate and useful.

4.1 The sample

This consisted of 15 third-year (pre-registration) learners in the on-teaching hospital. The learners were attending the pre-registration block two months before their final examinations for State registration.

6.42 Procedures

The director of nurse education (DNE) of the school used in the exploratory studies above was again approached for assistance. Permission was granted for the views of learners to be canvassed on the subject of the study i.e. how learners at this stage of their training viewed the role of the life sciences in nursing. The researcher was introduced to the students at a time allocated for the purpose by the senior tutor. The purpose of the study was explained to the group and it was suggested that a tape-recorded discussion might be helpful to the researcher in the later analysis of the views expressed. The learners were assured that confidentiality would be maintained in respect of all information obtained. However, individuals were free to withdraw from the study if they so wished. In the event, all the fifteen learners agreed to participate in the recorded discussion. The classroom was arranged with the tape recorder placed on a table in the middle of the room.

The researcher introduced the discussion as follows:

I am interested in the teaching and learning of the life sciences in nursing education. If you consider the types of nursing activities involving nurses, they can be classified broadly according to the level of knowledge of these sciences that a nurse might require in order to understand the reasons for her actions.

At this point, the learners were shown the model developed for this study and the nature of nursing tasks as defined in Chapter V i.e. TO, TS, TC and PPD types (see p 115). It was suggested that each type of nursing task might require

specific levels of knowledge of the appropriate life sciences in order to be performed competently. This discussion was therefore concerned mainly with the views of the learners on what they considered to be the role of the life sciences in their education. A two-hour long discussion followed as the group explored each of the research questions outlined above. At the end of the discussion, the learners were thanked for their co-operation and the confidentiality undertaking was repeated.

6.43 Data analysis and findings

This was a further exploratory attempt in search of an appropriate method for a preliminary study of the subject. It was not intended to analyse the data in terms of individual learner's contribution given the number of learners involved and their anonymity. The latter was considered important so that respondents might feel free to express their views without any fear of being quoted individually since they were not known as such to the researcher. The objective therefore was to listen to the discussion, tape-record it and use the emerging views either as a basis for individual interviews with a random sample of the same learners or for the design of a questionnaire for the main study in Stage II. In the event, analysis of the taped discussion proved difficult because of the inaudibility of part of the contributions. However, the major theme that emerged from the discussion was the perceived haphazardness of the teaching of the life sciences in their experiences. In particular, respondents appeared to see the proposed model as being helpful in the identification of tasks in nursing and as a useful step in

the quest to identify levels of knowledge of the life sciences appropriate to the performance of different tasks. It was therefore concluded that the tape-recorded exploratory discussion with the learners was a helpful exercise in that it enabled the researcher to hear the views of learners at this stage of training and try out this method of data collection.

However, the exercise revealed a number of methodological difficulties of which the most important were:

1. Tape recording of group discussion for subsequent analysis can be problematical unless the group is small and the researcher can identify contributors individually either by voice or some other means. For instance, individuals could be given letters such as A, B, C etc so that this is repeated at the beginning of each contribution to the discussion.

2. Factors such as seating arrangement, placement of the microphone and the method of chairing the discussion must be carefully judged. It may seem advisable, where the researcher does not know the group, to arrange for someone known to the group to chair such a discussion e.g. their tutor. However, this may affect the objectivity of the exercise since learners may be reticent in expressing unpopular views.

Individual interviews with the learners could have overcome these two problems but, for this exploratory discussion, it was considered unnecessary. On analysis of the tape, the following themes emerged as the focus of the discussion with the learners:

The learners:-

a) suggested the teaching of a progressive knowledge of the life sciences in order to carry out nursing tasks

b) agreed that the suggested levels of task activities in nursing i.e. operational, specific, contextual and professional and personal as defined for the research would be helpful in determining such levels

c) stated that a number of nursing activities currently dependent upon medical prescription can be initiated independently by nurses if they have a structured knowledge base in the life sciences e.g catheterisation

d) agreed that the term 'bionursing' might be helpful as a way of providing a direct link between nursing and the life sciences.

6.44 Discussion of findings

The tape-recorded discussion with the third year learners revealed much evidence of conflicting perceptions of the role of the life sciences in their education. The learners expressed considerable feelings of anxiety about learning the life sciences particularly in relation to (i) the difficulty of relating information input to the provision of nursing care and (ii) their own competence as practitioners. There was evidence of a general agreement that a term such as 'bionursing' would be appropriate for a direct link between the life sciences and nursing procedures which depended upon a knowledge and an understanding of the reasons for their use.

6.5 Decision-making arising from the exploratory studies

These two exploratory studies provided opportunities to test the appropriateness of possible instruments (science test, questionnaire and tape-recording) and to develop the study further by clarifying the author's ideas:

1. The first step in the evolving research plan was a decision to focus attention on learners' perceptions in relation to the three questions (p144) formulated for the group discussion.

Reflection and discussions about the methodological approach led to a decision to use a questionnaire since this would overcome the many problems encountered in administering and

analysing a tape-recorded group discussion, without prejudicing the quality of the data collected. Larger numbers would be involved and the framework imposed by a questionnaire would also facilitate comparative analysis as appropriate. A start was therefore made on the study reported in Chapter VIII.

2. Subsequently, and after considerable discussion, it was decided to extend the study by exploring two fundamental and related areas of concern (Stages II and III):-

i) the perceptions not only of learners, but also of nurse tutor students and course directors preparing them with regard to the role of the life sciences in the performance of nursing tasks. Such an analysis might well have implications for curriculum development in relation to the life sciences in nurse education as well as test the theoretical model proposed in Chapter V.

ii) the preparation of nurse tutors for teaching based on a clear recognition of the importance of the life sciences as perceived by nurse tutor students and their course directors.

The use of two related questionnaires for canvassing the views of a large number of learners and nurse tutor students was considered appropriate and adopted for the main studies (Chapters VIII and IX). The number of course directors of nurse tutor courses and their geographical spread in

institutions in England and Wales made the choice of tape-recorded interview a more feasible tool for this group. The findings are reported in Chapters VIII, IX and X. Chapter VII deals with general methodological issues applicable to questionnaires and interview; specific aspects are discussed in the appropriate chapters (VIII to X).

CHAPTER SEVEN

CHAPTER OUTLINE

THE THEORETICAL FRAMEWORK AND THE EMPIRICAL STUDY

CHAPTER VII

GENERAL METHODOLOGICAL CONSIDERATIONS IN RELATION TO THE MAIN STUDY

7.1 Introduction

7.2 Sampling

7.3 Questionnaire design

7.31 Limitations to the use of questionnaire

7.32 Overall considerations in questionnaire design

7.4 Interview design

7.5 Cost-effectiveness of surveys

7.6 Analysis of data from surveys

7.61 Handling the quantitative data

7.62 Handling the qualitative data

7.7 Reliability and validity

CHAPTER VII

GENERAL METHODOLOGICAL ISSUES RELATING TO THE MAIN EMPIRICAL
STUDIES7.1 Introduction

Methodological problems in surveys abound and have been extensively reviewed in the literature. Moser and Kalton (1977) provide one of the most comprehensive of these methodological reviews. The authors considered the variety of methods available to the researcher and the nature of the critical decisions that have to be made on the choice of appropriate method in order to avoid some of the common and uncommon pitfalls in the investigation of problems. The overwhelming evidence from the literature points to the fact that all approaches have advantages and disadvantages. Although the nature of the problem being explored inevitably determines the choice of methodology, the extent and nature of available resources have considerable influence on what method the researcher finally chooses. Oppenheim (1966) considers that a survey method, though popular with researchers, should be closely related to the problem under investigation. It should reflect the most appropriate means of data collection and this should be related in turn to the type of data analysis planned.

In the study reported below, it was decided to use the following methods for canvassing the views of learners, nurse tutor students and course directors on the role of the life sciences in nursing education. For the learners (n=165) and

nurse tutor students (n=324), a survey by questionnaire was favoured in each case because of the sample size. In the case of course directors (n=12) and supportive staff who participated in the survey (n=4), however, the number involved was small and it was decided to conduct individual interviews. Moreover, it was realised that the views of course directors on a wide range of issues related to nursing education and teacher preparation would be important and an interview seemed the most appropriate method for collecting the expected rich qualitative data.

7.2 Sampling

There were a number of problems related to the selection of the samples not least those of size and composition. This required a careful definition of the problems with each stage of the study was expected to raise. In the case of the learners, it had been found in the preliminary study that the life sciences were being used largely implicitly and no conscious thought appeared to be given to their contribution to the performance of tasks. In view of the reported better educational backgrounds of learners in teaching hospitals and the educationally different clinical environment in which they are prepared (Bosanquet and Clifton 1973; Straw 1981), it was decided to include a larger number in the sample.

The problem of composition of the sample was, however, a much more difficult one in the planning stage. It was realised that the block system of nurse training was such that different groups would be in schools during the period of the

study. Thus learners who would be involved in the survey would represent the different years of training i.e. first, second and third years. However, while first and second years represent clearly defined periods of training, a learner in the third year could be at the beginning or near the end of training. The latter is the pre-registration period and it seemed necessary to include such a group in the sample because of their seniority and probable greater awareness of the contribution of the life sciences to their professional training. In the event, the three teaching hospitals approached were able to provide appropriate sets which included learners from the three years of training for the sample (n=165). It had been hoped to select a random sample of learners from each type of training school but the researcher was unable to increase the number of non-teaching schools in the study. This was partly because of the merger of previously non-teaching schools under one large teaching hospital group and partly because it was intended to confine the study to general training in the south-east of England.

The sampling technique for the nurse tutor group was based on the need to obtain information from two non-comparable cohorts of students i.e. those at the beginning of their courses and those at the end. Because of the timing of the study, however, the latter group were first canvassed and this was helpful in that they had already undertaken teaching practice during which the uses of the life sciences would have formed part of their preparation. The second group without this experience would enable comparisons to be made

in the responses of the students where teaching practice experience was expected to make a difference. The timing of the survey of nurse tutor students for both groups was such that the use of self-completion questionnaires was judged the most suitable and economical way to reach them. The sample therefore consisted of two sub-samples (those with teaching practice experience, $n=176$ and those without this experience, $n=148$).

In each case, however, the entire student population was included in the survey. This was essential firstly because of the different institutions in which courses were conducted and the possibility of differences in their approaches. Secondly, it was hoped to ensure a high response rate (at least 60% for an acceptable level in a questionnaire survey).

The sample of course directors ($n=12$) was self-selecting in that it was decided to canvass the views of all of them throughout England and Wales. In the event, other supportive staffs were present in four centres when the interviews were conducted hence the interviewees were increased ($n=16$).

7.3 Questionnaire Design

Provided the problem of non-response can be minimised, the evidence from the literature on methodology suggests that a questionnaire could prove the most suitable instrument for the proposed learners and nurse tutor students studies. Among its many advantages are its economical nature; its potential efficiency in reaching a geographically scattered sample of

learners and tutor students; and the speed of response which allows non-respondents to be followed up and thus increases overall response rate. Essentially, a questionnaire offers an identical format for all respondents and, when being analysed, this allows for reflection by the researcher while checking responses. The impersonal nature of the questionnaire also encourages respondents to give open, honest answers. Finally, much thought was given to the ease with which a well-designed questionnaire can be coded and analysed.

7.31 Limitations to the use of questionnaires.

Despite these advantages, however, it was important to be aware of the limitations to the use of questionnaires in this study. In particular, it was realised that non-respondents could give biased results unless they were identified and encouraged either to respond or give reasons for not responding. In the case of the nurse tutor students, it was felt that a low response could be prevented by enlisting the help of course directors in the distribution of the questionnaires. There is evidence in the literature to show that postal questionnaires invariably achieve lower response rates in the population at large when compared with face-to-face questionnaires. While the latter approach was used for the learners' study, it was impossible to undertake this in the case of nurse tutor students. Moreover, such an exercise could be costly in terms of time and money.

For instance, Fraser (1969) in a study of the home

environment of a sample of Aberdeen school children (n=470) reported considerable difficulty in relation to face-to-face approaches to respondents. She reported empty houses where parents had moved away and even over five visits being made before respondents were finally contacted. It could be that postal questionnaires would overcome the latter type of problem and Wren et al (1971) considered that questionnaires in such cases could be sent in 'waves' though this could not guarantee high response rates. Other limitations reported in the literature relate to lengths of questionnaires, their presentation and even the choice of colour for covers (Raphael 1973). Furthermore, they do not afford opportunities for probing or for clarifying ambiguous answers, and there is also a risk that respondents have not all interpreted every question in the same way. Many of these limitations are important methodologically, but they can be overcome by care in ensuring that questions are simple and straightforward.

Although Scott (1961) had noted the unfavourable effect of too demanding a questionnaire on the rate of return, respondents in the nurse tutor study co-operated and completed the questionnaire fully. Even when individuals commented on the length of the questionnaire (as reported by one course director), the point seemed to be accepted that this was a matter of necessity in view of the detailed information that was being sought. However, the length of a questionnaire might also act as an incentive to completion as Heberkin et al (1978) reported. They suggested that respondents might see the length as a reflection of the

importance attached to the subject of the study.

7.32 Overall considerations in questionnaire design

As important as the issues referred to above are general aspects of questionnaire design and administration. Thus the covering letter to course directors and students stressed that confidentiality would be ensured for individual respondents. Furthermore, each item on the questionnaire was preceded by clear instructions and examples were indicated where appropriate. The resources required for administration of the questionnaire were considered and it was accepted that course directors' co-operation would cover this aspect of the study. Careful handling of follow-up letters to non-respondents can help to ensure eventual response in the case of postal questionnaires. Details of piloting and administration are discussed in Chapter IX.

7.4 Interview Design

Many of the above considerations apply to the interview but there are important differences. These arise from the fact that the interview is a face-to-face verbal interchange. The use of this method is subject to all the advantages and disadvantages of an interactionist experience between the researcher and the interviewee. A number of authors have suggested that interviews are often to be preferred to questionnaires because they have a number of advantages. French (1981) notes that interviews give the impression of being less taxing to the respondent as well as its obvious flattery. However, it is important to bear a number of

pertinent issues in mind. For instance, the form that an interview takes is an important determinant of the information to be obtained by the interviewer. Thus interviews can be structured and formal so that they are, for all practical purposes, similar to questionnaires or they may be unstructured and totally informal. The choice has to be made in the light of the questions to be answered and Oppenheim (1966) and Moser and Kalton (1977) suggest that the choice should be dictated by the character of the survey problem, the accessibility of information required and the use to be made of the results.

Another writer, Caplow (1966) sees advantages in the formal interview and argues that it is gratifying to the participants since one would talk while the other would listen. Hughes (1980) in a study of the consultation pattern in general medical practice, notes that the essence of a successful interview lies in the achievement of good communication between the participants. As to the relationship between the participants, Polit and Hungler (1978) warn against the rigid use of the interview as a 'neutral agent'. They argue that such an approach could create artificial human behaviour which would inhibit rather than encourage the respondent to offer information freely. Hence the need is to establish a genuine human interaction rather than a contrived situation for research purposes. However, the formal approach has its uses and Scott (1961) suggests that it allows for a greater uniformity of responses especially where the sample is homogeneous in relation to the subject being investigated and the sample concerned is very small.

In summary, the views of Pomeroy (1962) on conditions likely to ensure interviewer-interviewee co-operation are worth noting. He suggests three conditions to be satisfied by the interviewer:

1. The importance of the research as perceived by the interviewee.
2. Assurance of confidentiality of all the information obtained.
3. Maintenance of interviewer neutrality and objectivity.

In relation to (1), course directors had indicated their support for the study during the nurse tutor students' survey. As regards (2), confidentiality was ensured in the collection of data and generally as a separate undertaking given to all participants in the investigations. Pomeroy's last condition was satisfied as far as it was possible through a previous joint publication by the researcher and supervisor which had argued the case for a sound basis in the biological (life) sciences for nurses (Akinsanya and Hayward 1980). However, neutrality and objectivity were also safeguarded by the interview schedule design.

7.5 Cost-effectivness of surveys

Surveys are expensive - their costs have been studied in relation both to cost-benefit analysis and their effectiveness in generating high response rates. In all

surveys, limited funding dictates judicious use of resources and the choice of research tools represents an important means of keeping costs down while ensuring successful completion of a study. The literature evidence suggests that where rewards or tokens are paid for information, costs are inevitably increased. However, in a critical review of methodology in this area French (1981) points out that the 'self-evident importance' of a survey might provide sufficient motivation for respondents to feel that their contributions are worthwhile. In this study, costs of postage of questionnaires were considerably reduced by an agreement to send questionnaires in bulk to course directors for distribution to their students. This ensured delivery to each student and non-response could be accounted for by individual decision not to participate rather than a failure to receive copies of the questionnaire. This approach provided a true measure of the response rate achieved.

Reference was made above to the problem of interviewer bias. It is also important to consider the effect of the interview technique on response rate. Attention had been drawn to the interactive nature of the interview and mutual sizing up occurs between participants. Thus the nuances of a face-to-face interaction operate even in the formalised atmosphere of recorded interviews. Hence interview bias is an important consideration and the social processes form an essential part of the exercise. The balance of evidence in this study supports the literature standpoint that interviews achieve substantially higher response rates, are more

cost-effective compared with self-completion questionnaire and provide opportunities for in-depth knowledge of the respondent's views.

7.6 Analysis of data from the surveys

Data obtained from this study were of two main kinds.

1. Quantitative data:-

a) pre-coded information from self-completed questionnaires for learners and nurse tutor students.

b) quantifiable information from the semi-structured interview schedule for course directors.

2. Qualitative materials from comments by learners, nurse tutor students and the recorded interviews with course directors.

7.61 Handling the Quantitative Data

There were three aspects to this part of the analysis:-

a) General examination of all the questionnaires to ascertain the response rate and the overall completion pattern by respondents.

b) Coding of data from each questionnaire and its transfer on to computer cards for statistical analysis. The Statistical Programme for the Social Sciences (SPSS, Nie et al 1975) soft-ware

facilities were employed. Data from the nurse tutor students' questionnaires were later transferred on to magnetic tape for permanency to prevent deterioration due to repeated use.

c) Computing facilities were used to calculate the resulting statistics. The choice of statistical tests of significance was limited because of the nature of the nurse tutor population. Non-parametric inferential tests are particularly suitable because of the fact that they are distribution-free. They are considered suitable for the nominal data since assumptions of normality cannot be met for the stronger parametric statistics. The use of Likert-type pre-coded questions allowed frequencies and percentages to be calculated and two-way contingency tables were obtained to test the differences between variables which had been classified into mutually exclusive categories through the sub-programme CROSSTABS of the SPSS. Hypotheses formulated for the study were tested through the sub-programme and statistical inferences were made in the light of calculated chi-square statistics and their degrees of freedom where appropriate. Significant differences were related to specified variables such as the type of course attended by nurse tutor students, their previous appointments and sex. It should be noted that highly significant differences would be inferred if the differences observed could have

occured by chance in not more than once in a hundred i.e. $p < 0.001$ or where such differences could have occurred by chance not more than five times in a hundred i.e. $p < 0.05$. Results showing levels greater than 0.5 are not significant (ns).

7.62 Handling Qualitative Data

The analysis of qualitative data presents many problems and is therefore potentially contentious. Content-analysis (used in this study) is commonly employed in analysing texts, verbal interactions and interview data involving opinions and perceptions. In recent years, interesting results have been obtained using techniques based on 'network analysis' (see, for example, Ogborn & Bliss (1977) study on 'Students' Reactions to Undergraduate Science).

It should be noted that in their classical introduction to the use of content-analysis, Berelson and Lazarsfeld (1948) advocated rigour in the approach to the process of itemisation in order to prevent bias. In much the same way, Lindsey and Arronson (1968) point out that such categorised materials can be quantified without the danger of introducing bias into the analysis.

The use of the computer has been suggested by Ball and Hannah (1974) but specifically in relation to the analysis of literal materials such as textbooks

and other similar published work. This is because an enormous number of categories can emerge with considerable demand on mathematical manipulations. In this as in other approaches to content-analysis, a decision must be made as to what unit should be used as the basis of the analysis. A factor in such a decision is the nature of the information which it is hoped to obtain from the materials. Several approaches have been cited in the literature and MacLeod-Clark (1982) concludes that in the face of the wide range of units available to the qualitative researcher, the choice of a suitable one must depend on the rationale of the research and the information to be derived from such analysis.

The problem of categorisation is nevertheless important and Honey (1976) states that such categories must, amongst other criteria, be relatively simple, capable of identification by others with high reliability and can be meaningful to those who would use them. Various strategies for the construction of categories abound in the literature. These range from simple word counts, categorisation of behaviours, beneath-the-behaviour surface interpretations to those of non-verbal behaviour (Honey 1976; MacLeod-Clark 1982). Furthermore, identification of categories can be limited to a theoretical framework as noted above or be derived from a data base. For instance, in a

study by Melia (1982) designed to obtain information on what students think of nursing, 40 transcripts from informal interviews with trainees were analysed by the researcher herself. The approach, based on the principle of grounded theory (Glaser and Strauss 1967), yielded 256 items which were reduced on further analysis by the researcher to 30 categories. These were finally reduced to 6 conceptual categories derived, not by independent coders as would be expected on grounds of objectivity, validity and reliability, but by the interviewer/researcher as a participant observer. Melia argues that the qualitative researcher, rather than allow independent coders to interpret data dispassionately and objectively, should be directly involved because 'by the nature of the method the researcher and the data are inextricably bound up.' This raises a problem of reliability which, for MacLeod-Clark (1982) is of fundamental importance. In contrast to Melia's "Tell it as it is" approach, MacLeod-Clark argues that results from the use of methods of categorisation depend on the reliability of the coders as well as the units they are required to examine. However, methodologically, it must be admitted that Melia's tape recorded informal interviews lacked the visual impact of MacLeod-Clark's video-recorded interactions or which transcripts were based and from which the nurse interaction categories were

derived. More fundamentally, data from Melia's study came from face-to-face interactions between the researcher and her subjects as a participant observer, whereas MacLeod-Clark's data were the result of interactions between other people (patients, nurses and relatives). As an independent, non-participant observer, the presence of the researcher could not significantly affect any later desire to be totally objective. In a similar study by Fielding (1982), the researcher herself selectively analysed and coded the interactions between nurses and patients in geriatric wards obtained through radio-microphones and again, with the question of reliability being raised.

In the present study, interviews with course directors produced wide-ranging qualitative data on the role of the life sciences in nursing education and the preparation of nurse teachers. Identification and definition of the concepts to be analysed was based on the theoretical framework described in Chapter V. This was followed by content-analysis which involved a systematic examination of the recorded materials and selection of the unit of analysis in this case the emerging theme from each examined interviewee response. More specifically, the following steps were taken to obtain information from the recorded materials:-

a) A scheme for categorising the contents was developed. This was derived partly deductively from the theoretical framework and partly inductively from the emerging data themselves. Thus statements were categorised as either positive (when they suggest support for the life sciences in the nursing curriculum) or negative (when they show little or no support for the life sciences).

b) A system of explicit coding and scoring was developed for the categorisation scheme and pretested by the researcher who applied it to parts of the contents to be analysed. This enabled changes to be made either to the categories themselves or the scoring instructions for coders.

c) Coders were selected at random from schools of nursing at nurse tutor level in order to help in the analysis as independent coders. An initial pretest with selected coders (n=4) was undertaken to determine the method of calculating inter-coder reliability.

Finally, the content analysis was performed by the randomly selected coders (n=18) and the results analysed and interpreted. Further discussion is presented in chapters VIII, IX and X. In particular, comments by learners and nurse tutor students were not content-analysed because in the case of learners, they answered a specific question on the appropriateness of the bionursing concept and its application

to nursing. For the nurse tutor students, comments were supportive of coded responses as amplification or justification for the choices made.

7.7 Reliability and Validity

The use of content-analysis for the qualitative data enables categories to be established and inferences drawn or questions asked about their nature as responses. The use of independent coders ensured reliability but, as will be discussed later (Chapter X), a combination of researcher coding and independent coders was used to satisfy the need for objectivity and reliability in the handling of the qualitative data. Thus the approach allowed for a substantial degree of reliability and validity as measured by the agreement between coders and reported as inter-coder agreements. As Oppenheim (1966) noted, the development of new instruments is an essential, on-going and important exercise in the research process. In an evolutionary approach to research as in the present study, only through repeated use and refinements of instruments can a satisfactory test of reliability and validity be established. Although statistical techniques exist to give support to efforts designed to achieve these objectives, Hope (1967) points out that:

Reliability and validity are a pair of concepts which are often employed as between them they exhaust all the possible attributes of a research instrument. But lying behind them is another attribute which might, rather vaguely, be termed usefulness. Some writers are so pleased with the 'hardness' of their data that they fail to notice both the difficulty of analysing it (because it does not conform to assumptions made by powerful parametric techniques) and the paucity of the explanatory information which it conveys. Statistics are too important to be left to statisticians."(p 77)

In the light of these methodological issues and their relevance to the present study, the empirical studies will now be presented in Chapters VIII, IX and X.

CHAPTER EIGHT

CHAPTER OUTLINE

PART III

THE MAIN STUDIES

CHAPTER VIII

LEARNING AND USING THE LIFE SCIENCES: THE PERCEPTIONS OF
LEARNERS
(STAGE I)

- 8.1 Introduction
- 8.2 Questionnaire design
- 8.3 Data collection
 - 8.31 The sample
 - 8.32 Preliminary procedure
 - 8.33 Procedure for data collection
 - 8.34 Response
- 8.4 Data analysis and results
 - 8.41 Nursing-initiated procedures
 - 8.42 Distinction between bionursing
and biomedical approaches to patient care
- 8.5 Discussion
- 8.6 Conclusions

CHAPTER VIII

LEARNING AND USING THE LIFE SCIENCES: THE PERCEPTIONS OF LEARNERS

(STAGE I)

8.1 Introduction

The preliminary exploratory studies reported in Chapter VI point to the need for a further examination of the way students learn and use the life sciences. The evidence, though inconclusive at the exploratory stage, points partly to conceptual problems and partly to those inherent in the form of education and training of learners. In the tape recorded interview with learners, it seemed that their experiences of the approaches adopted, in their school of nursing, to the application of knowledge derived from the life sciences to practical nursing were largely biomedical, unstructured and disappointing. This finding confirms Wilson's (1975) conclusion of the haphazardness of nurse training in the way these sciences are taught and used by learners and the qualified alike. In the light of the evidence from the literature and the exploratory study that this problem exists, it was decided to widen the scope of the study to include teaching hospitals in the main study.

The following research questions were therefore formulated:

1. Which of the life sciences taught to learners do they

perceive as being difficult either to learn or apply to their practice?

2. Which of the activities performed by nurses that involve the application of the life sciences could they initiate independently of medical prescription if they had an appropriate understanding of the underlying life sciences?

3. Would the term 'bionursing' (developed in the theoretical framework in Chapter V) provide a more direct link between nursing and the life sciences than the present use of the term 'biomedical?'

8.2 Questionnaire design

Although the recorded interview with the learners in the pre-registration block (n=15) had yielded considerable information helpful to the study, it was decided to use a questionnaire for two major reasons:

1. A large sample of learners could be canvassed for their opinion on the subject of the study.
2. Written responses would be obtained rather than verbal ones thus reducing the amount of transcription that would be involved in recorded interviews with a large group of learners.

For these reasons, problems identified in the discussion with the learners were noted (Chapter VI). These formed the basis for the development of an initial series of items to be included in a questionnaire for learners in the main study.

These items were discussed with two experienced researchers involved in an extensive national survey which covered the use of questionnaires for a large sample. The consultation resulted in the design of a six-item questionnaire with single and multiple response questions for piloting.

The views of fellow researchers(n=6) were then sought on the designed questionnaire which was then piloted. The learners who had taken part in the earlier discussion were approached and they agreed to complete the questionnaire. It was hoped that the seniority of the learners and their familiarity with the issues would enable them to point out any ambiguities or difficulties in answering the questions. The learners (n=15) completed the questionnaire which was further discussed and modified in the light of problems identified e.g. ambiguity of questions or the order of presentation. The validity of the instrument was considered (Chapter VII) and two tutors in the school were separately approached for their comments. These comments and those of departmental researchers produced no further problems and a final version of the questionnaire was prepared.

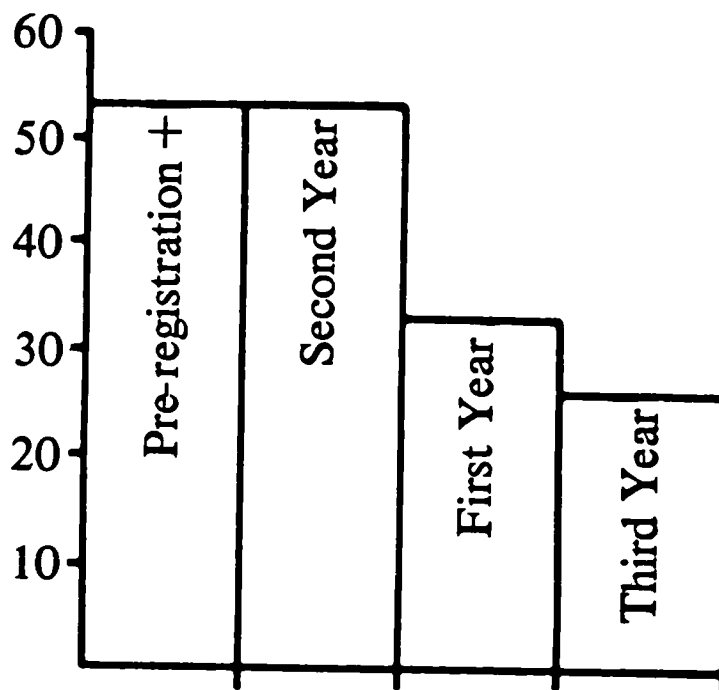
Reliability of the instrument was a matter of concern during this stage of the study. Reliability was confirmed by comparison of the views expressed by learners in the discussion with the responses to the questions on the questionnaire. The instrument was therefore taken as being a reliable means of canvassing the views of learners in relation to the subject under study. No further reliability assessment was therefore undertaken.

8.3 Data Collection

8.3.1 The sample

Three London teaching hospitals (selected at random) were approached for permission to administer the questionnaire to learners at various stages of training i.e. first, second and third year learners. The latter included 57 learners in the immediate pre-registration period of training. Altogether, 165 learners from all years of training completed the questionnaire in one non-teaching and three teaching hospitals in the south east of England as shown in Figure 8:1

Figure 8 : 1
Stage of Training of Respondents (n=165)



+ Two months before State Final Examinations

8.32 Preliminary procedure

At each of the hospitals, the director of nurse education (DNE) was approached by letter and a subsequent meeting was held to discuss the aim of the study as previously outlined. Further meetings were held with senior tutors responsible for the group of learners to be canvassed. In order to encourage participation, it was agreed that:

1. The researcher would assist the schools in the teaching programmes because of shortage of staff and the need to continue the programme for the block.
2. In order to avoid the possibility of respondents' bias, the questionnaires would be administered after the initial introduction at the first meeting before teaching sessions were undertaken by the researcher.

8.33 Procedure for data collection

In each school, the researcher was introduced to the learners by the senior tutor. After discussing the aims and objectives of the study, the researcher used the theoretical framework (Chapter V) to explain the nature of the problem with which the study was concerned. The learners were invited to assist with the study and assured of the confidential treatment of any information given. Individual consent was sought since participation was voluntary and four learners declined to take part and were excluded. The researcher was later informed that they feared it was an attempt to separate nursing from medicine. This was denied by the researcher. The

questionnaire was completed in class.

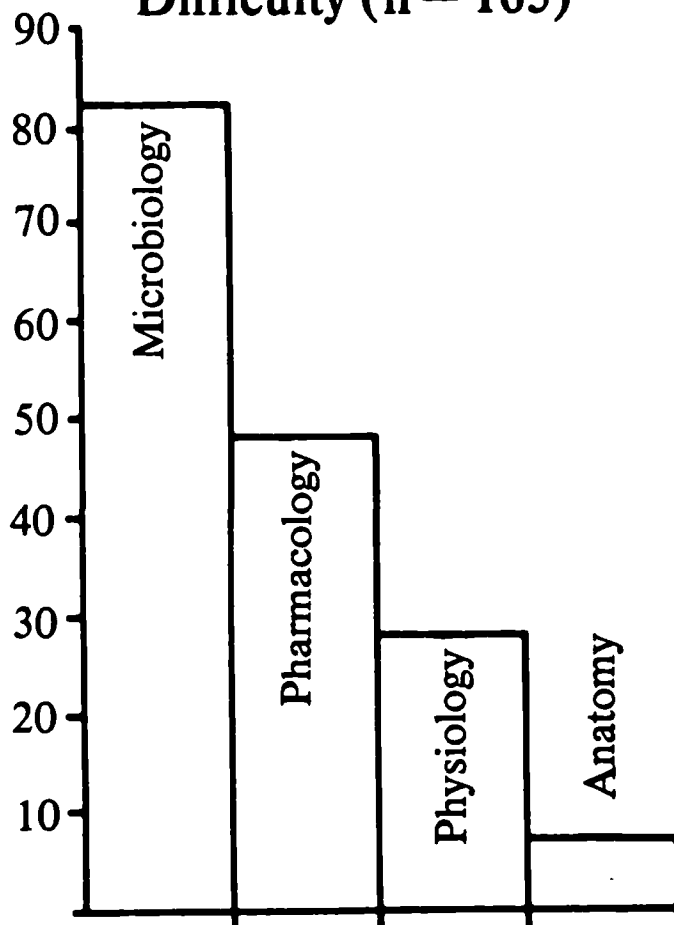
8.34 Response

97.6% of the learners thus completed the questionnaire. The open-ended questions were answered by respondents at the same time.

8.4 Data analysis and results

Quantitative data from the questionnaire were analysed as described (Chapter VII) and series of calculations undertaken using the Statistical Programme for the Social Sciences (SPSS) soft-ware facilities. The results are presented below:

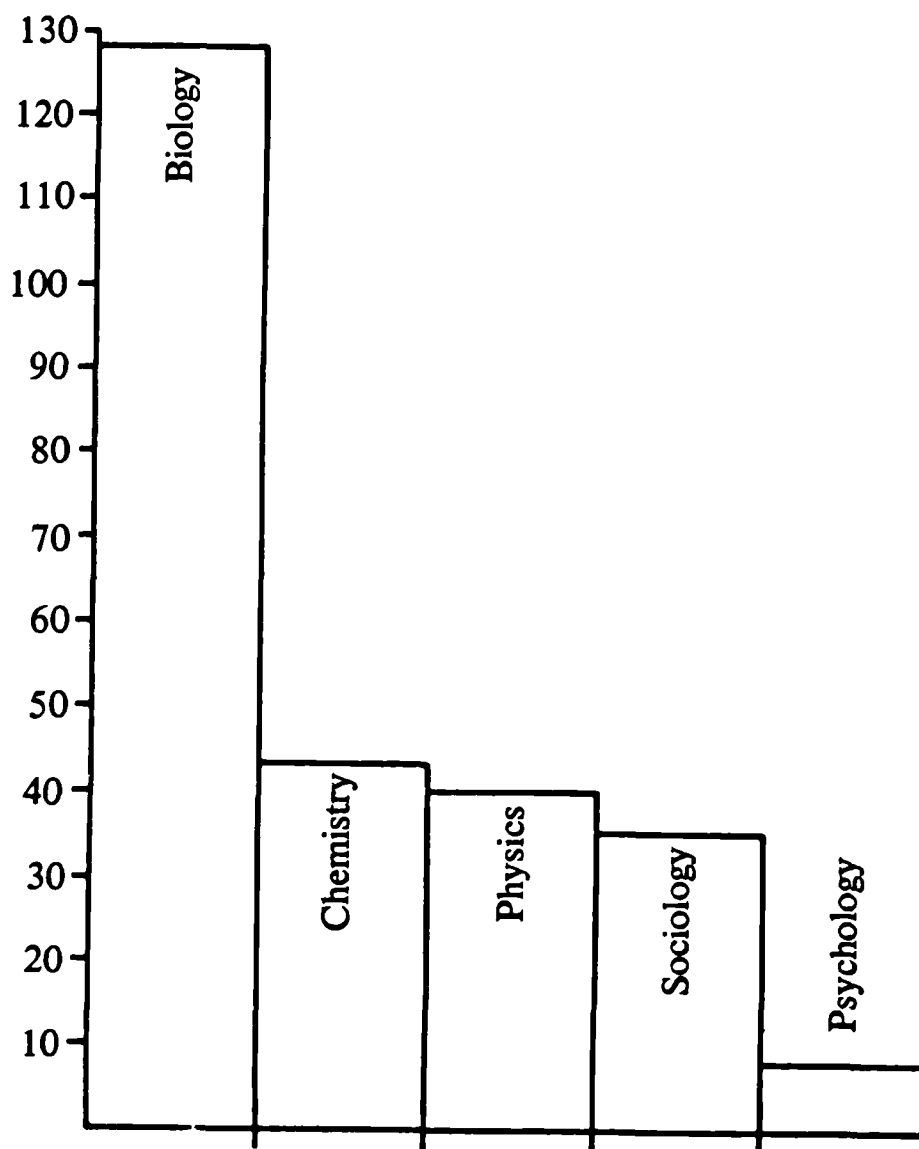
Figure 8 : 2
Learners' Indication of Life Sciences
Subjects in Which They Experience
Difficulty (n = 165)



One learner may rank more than one subject

Figure 8:2 indicates that less than half of the respondents perceived difficulties in the learning of the life sciences. The nature of these difficulties was not explored in this study. This would seem an area worthy of further investigation particularly in microbiology which was indicated as being difficult to learn by 49.7% of the learners. Figure 8:3 shows the 'O' level qualifications of respondents in the basic sciences.

Figure 8 : 3
Educational Qualifications of Learners — 'O' Level Attainments (n = 165)



* One respondent may have a combination of passes.

Figure 8:3 is important for two reasons. Firstly, it shows that a high proportion of the learners had passed in biology and could therefore be expected to have a fairly good understanding of basic biological terminologies which are later to be studied in the life sciences. Secondly, in both chemistry and physics, the proportion of respondents with these qualifications at 'O' level was low. The implication of this could be serious in that both biochemistry and physiology rely heavily on concepts derived from the physico-chemical sciences and a weakness in these subjects could well prevent the learner from achieving an early understanding of concepts introduced later in nurse training which might depend upon their background knowledge in these sciences. Although sociology and psychology are not directly relevant to the present study, they were included in the survey because of their important contribution to the development of scientific thinking in the learner. This was an important aspect of the theoretical framework discussed in Chapter V.

As will become clear from the following sections, knowledge of applied anatomy and physiology was emphasised by respondents in relation to most of the nursing activities, although it is not clear whether an understanding of their underlying principles can be inferred from their awareness of the constant demands made upon them in clinical practice. It could in fact reflect little more than the constant emphasis upon the importance of these subjects in nurse training.

Table 8:1

Indication of Areas of Nursing Practice for which the nurse requires a high level of knowledge of the life sciences*(n=165) Q.5

of nursing activities of level of knowledge of life sciences required Practice	Anatomy		Physiology		Pharmacology		Microbiology	
	n	%	n	%	n	%	n	%
the unconscious patient	115	69.7	45	27.3	1	0.6	1	0.6
nt of IV infusion+	26	9.7	105	63.6	8	4.8	10	6.1
ation of drugs (es)	2	1.2	6	3.6	148	89.7	7	4.2
nd recording blood pulse, respirator	4	2.4	155	93.9	4	2.4	-	-
erature	59	35.8	61	37.0	21	12.7	9	5.5
on of patients for ests	11	6.7	42	25.5	69	41.8	16	9.7
ressure areas	140	84.4	6	3.6	12	7.3	5	3.0
via naso-gastric tube	2	1.2	3	1.8	8	4.8	151	91.5
wounds	30	18.2	55	33.3	63	38.2	5	3.0
rine	13	7.9	46	27.9	65	39.4	6	3.6
nd removing bottles ans	6	3.6	136	82.4	15	9.1	7	4.2
ation of oxygen	145	87.9	7	4.2	9	5.5	7	4.2
a enema	104	63.0	43	26.1	1	0.6	1	0.6
ng procedures to	20	12.1	98	59.4	-	-	9	5.5
ene	148	89.7	8	4.8	2	1.2	5	3.0
atient up								

ous infusion
the not coded column.

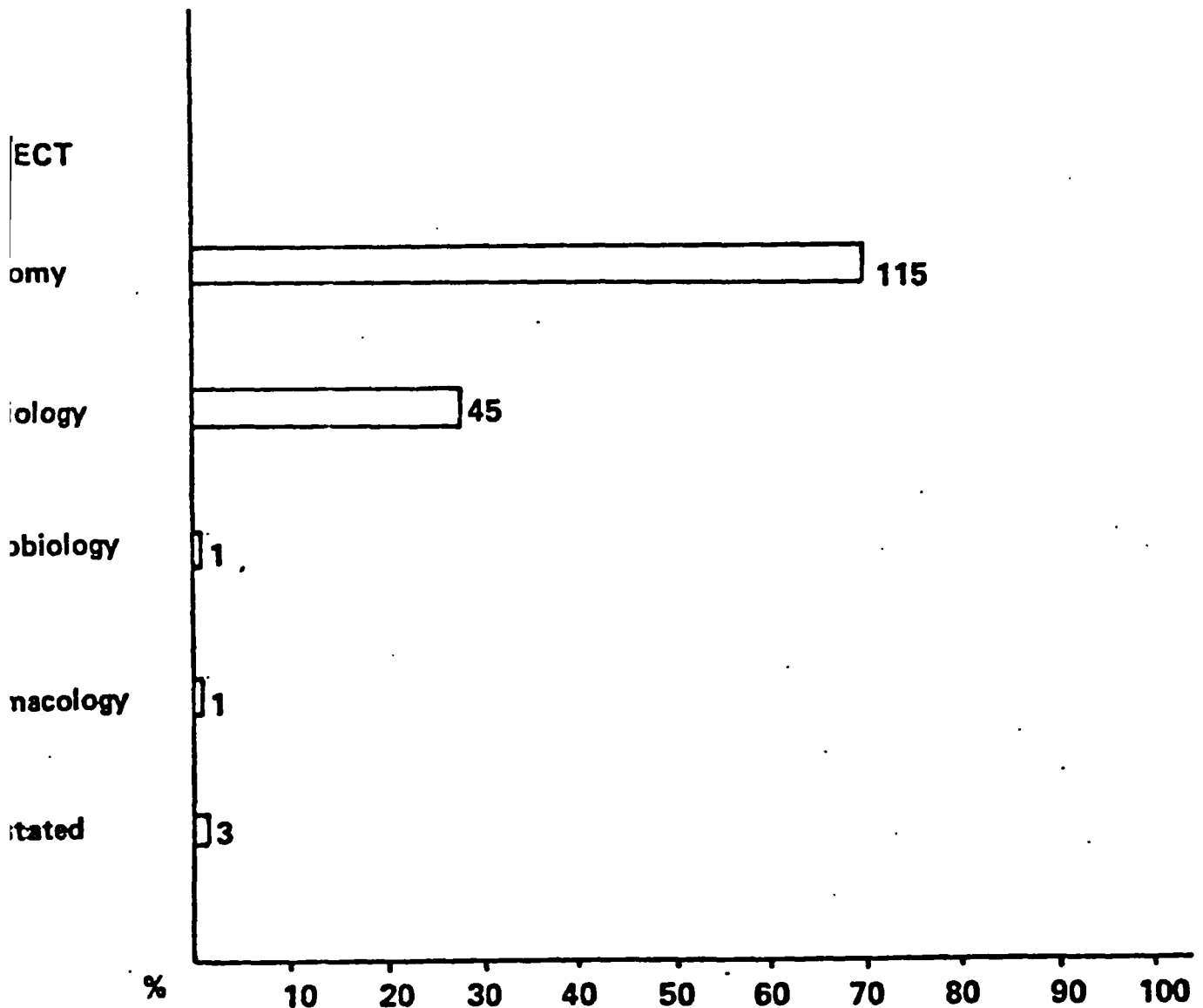
From Table 8:1 it would seem that respondents perceived the need for a high level of knowledge of the life sciences in relation to particular nursing activities. For instance, 69.7% regarded a high level of knowledge of anatomy as essential in the care of the unconscious patient while for getting patients up, giving an enema and nasogastric feeding, respondents saw a high level of knowledge of anatomy as being particularly essential to the nurse i.e. 89.7%, 87.9% and 84.4% respectively for each of these nursing activities.

Although a high level of knowledge of physiology was perceived as being essential to the nurse in the taking and recording of blood pressure, temperature and pulse (93.9%), it needs to be said that a knowledge of applied anatomy and physiology is inseparable from these practical nursing activities. Not surprisingly, 89.7% of respondents rated a high level of knowledge of pharmacology as essential to the nurse in the administration of drugs. On the other hand, respondents rated the need for a high level of knowledge of microbiology as essential in the dressing of wounds (91.9%). Yet only 5.5% of the respondents regarded a similar level of knowledge of microbiology as being essential for giving mouth care to patients. Indeed, care of pressure areas was consistently rated low in terms of the level of knowledge of the life sciences required to perform it. Nursing activities for which the level of knowledge required for their performance was rated less than 50% by respondents included some of the routine functions of the nurse i.e. preparation of patients for special tests (highest rating was 37.0% for physiology); that for pharmacology was care of pressure areas (41.2%). It would be interesting to compare these figures with similar results from the same age group outside the medical/nursing training background. It is conceivable that, for such groups, commonsense could account for much of the rating as reported above. Nevertheless, the learners represented different levels of training and their responses must, in a large measure, reflect professional orientation through their courses.

Figures 8:4-8:18 present results of the perceptions of respondents in relation to the need for a high level of knowledge of the life sciences in relation to specified nursing problems of the patient (Q.5 - Appendix 4). Numbers indicating high level of knowledge for dealing with each nursing problem are shown in Figures 8:4-8:18.

Figure 8:4
Nursing problem: care of the unconscious. Learners' perceptions of specific life sciences for which a high level of knowledge is required in order to provide nursing care. (n=165)

Nursing problem—care of the unconscious



69.7% of respondents rated a knowledge of anatomy as being important in the nursing management of the unconscious patient. Since applied anatomy and physiology is the usual approach to the teaching of these subjects in nursing, the 27.3% who rated a knowledge of physiology as being the next important subject must be viewed in this light of application of knowledge.

Figure 8:5
Nursing problem: management of intravenous infusion.
Learners' perceptions of knowledge of specific life sciences
required in order to provide nursing care. (n=165)

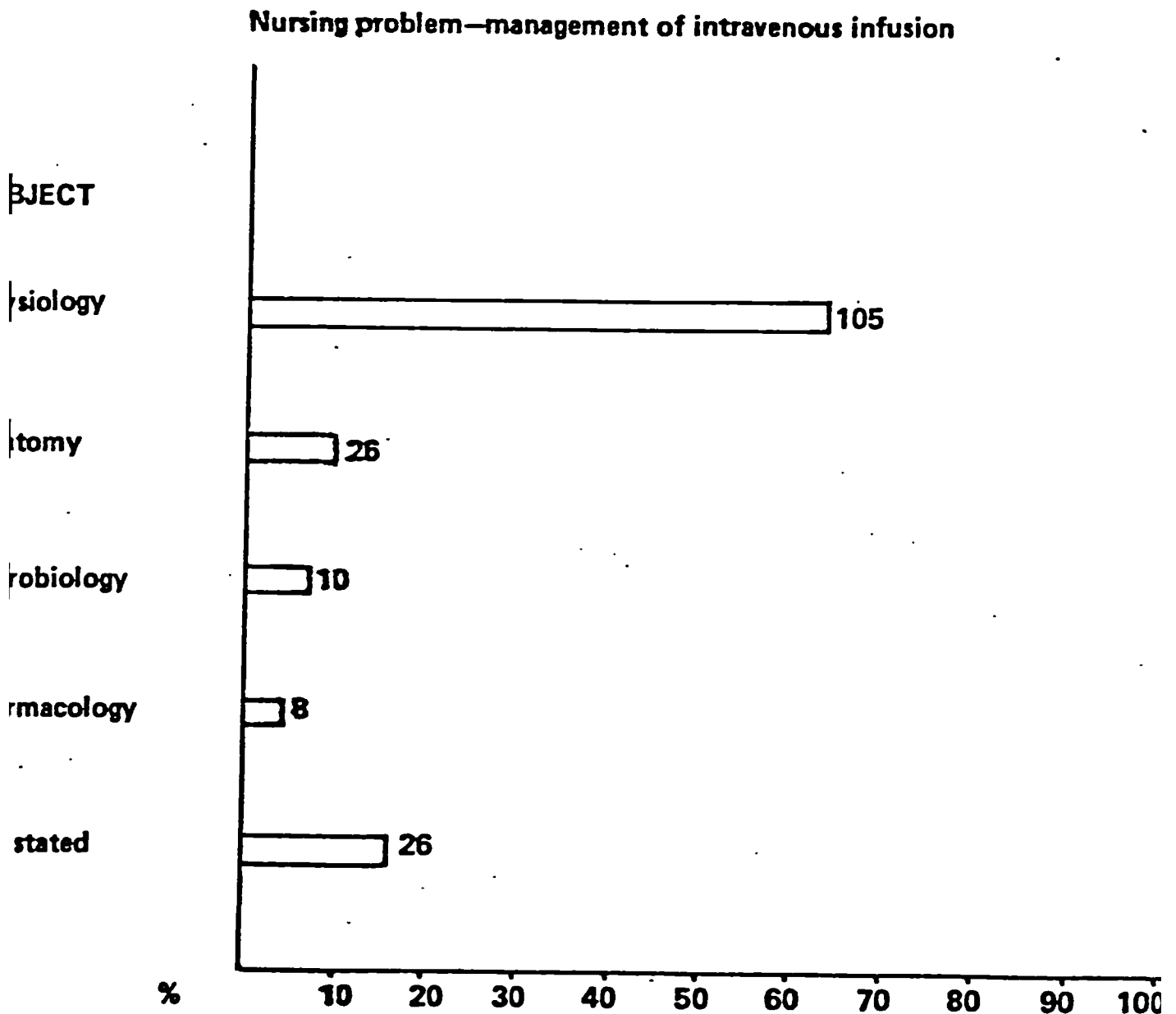


Figure 8:6

Nursing problem: administration of drugs. Learners' perceptions of knowledge of specific life sciences required in order to provide nursing care. (n=165)

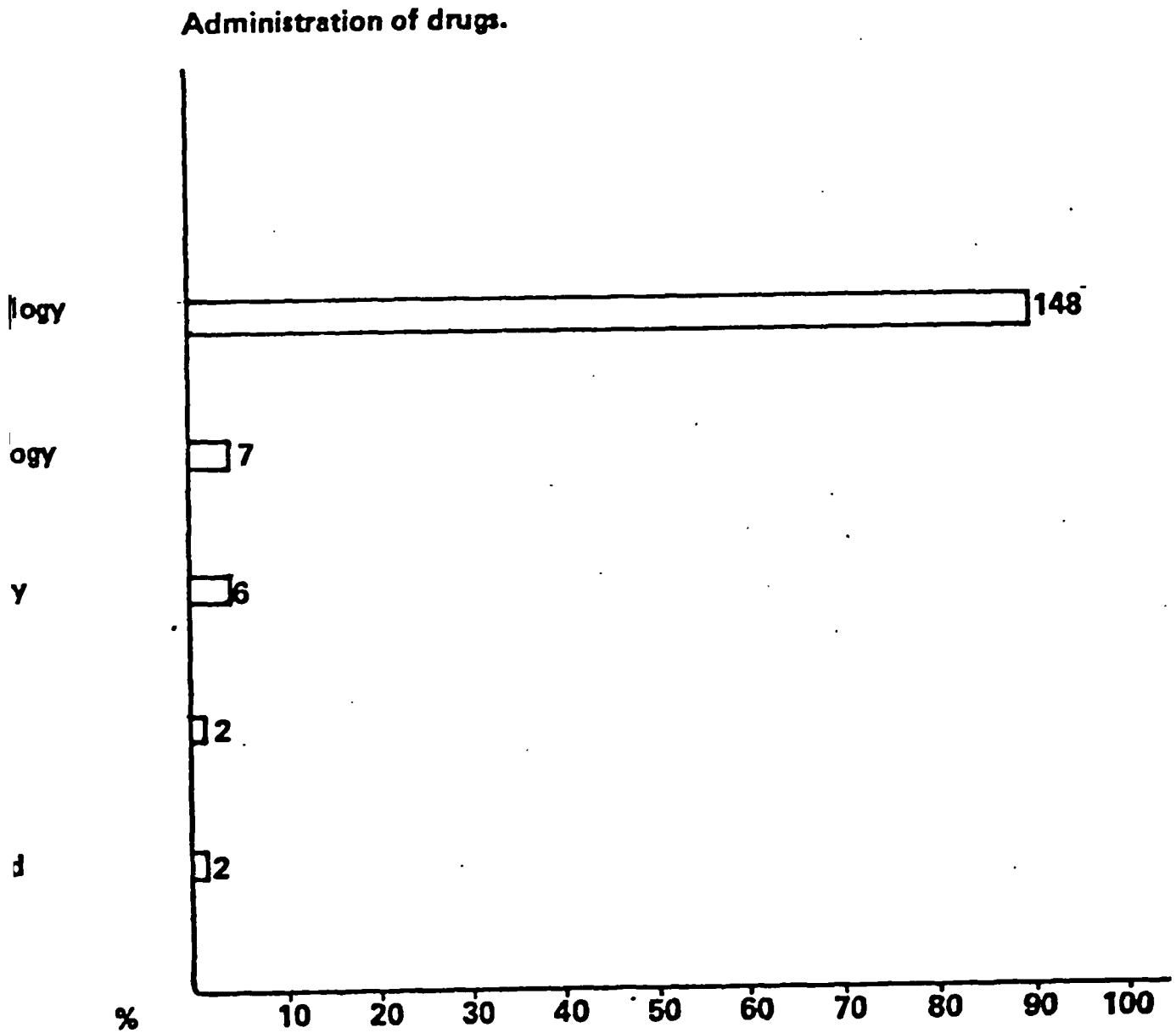


Figure 8:7

Nursing problem: taking and recording blood pressure, temperature, pulse and respiration. Learners' perceptions of knowledge of specific life sciences required in order to provide care. (n=165)

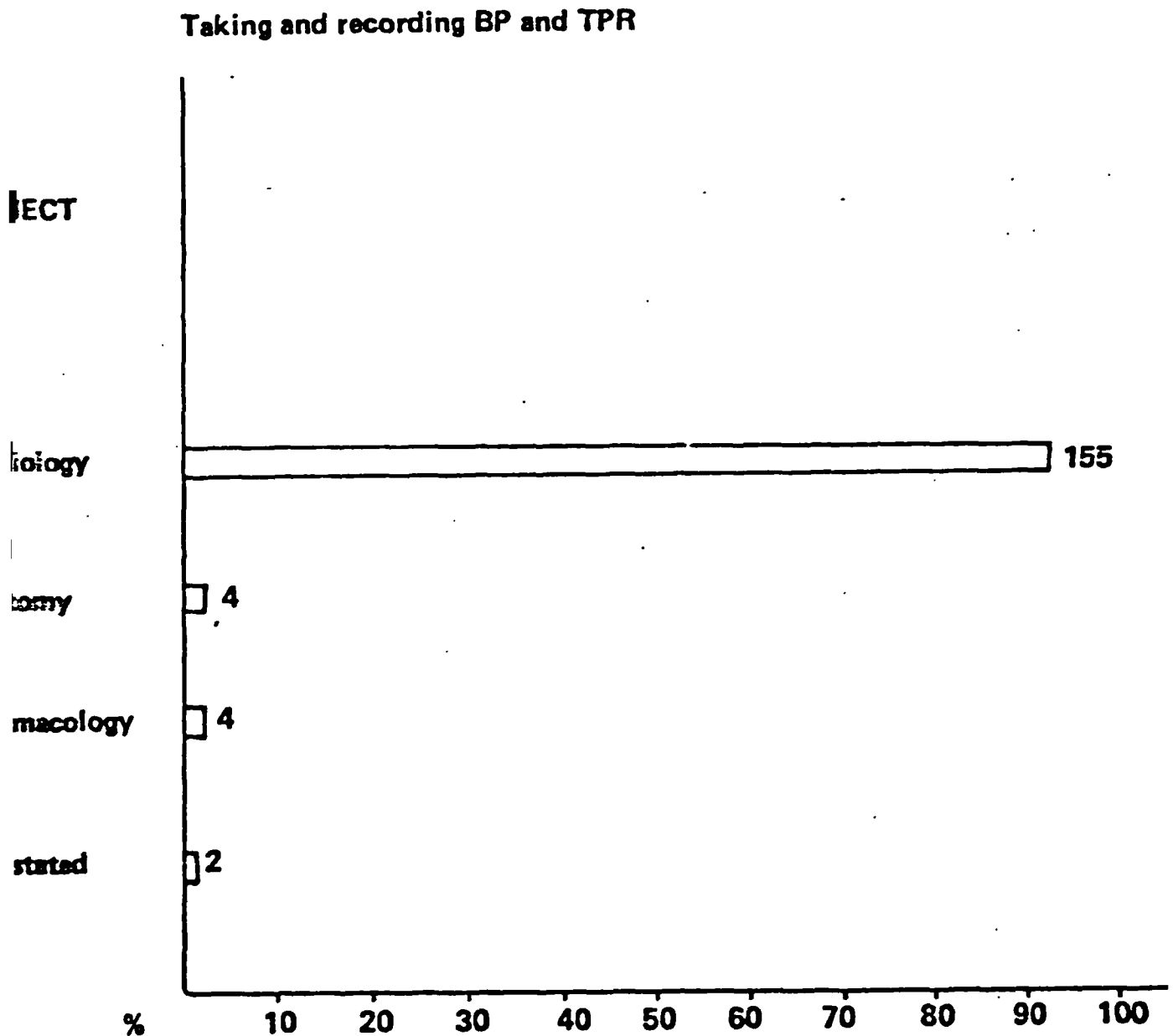


Figure 8:8

Nursing problem: preparation of patients for special tests.
Learners' perceptions of knowledge of specific life sciences
required in order to provide nursing care (n=165)

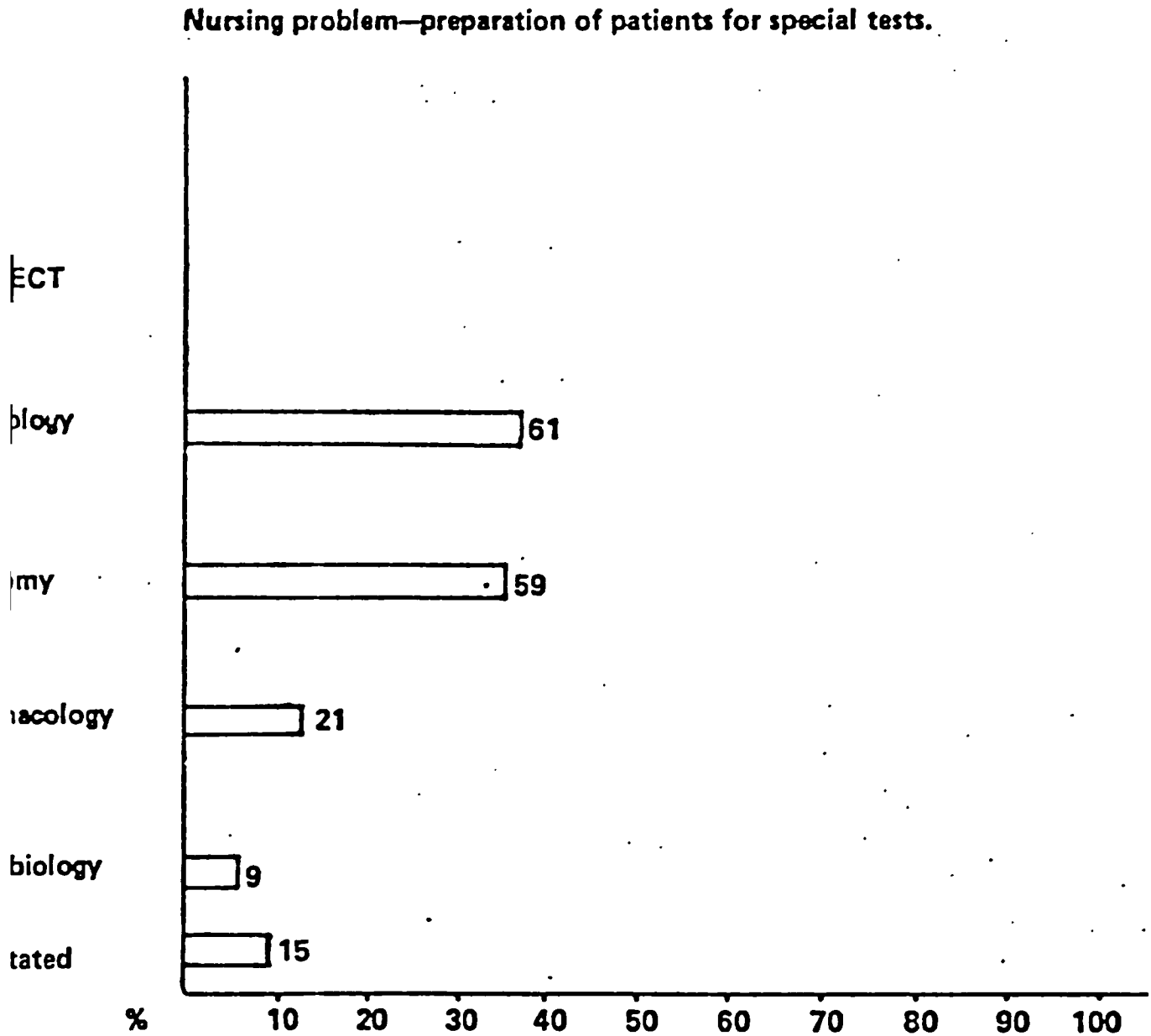


Figure 8:9

Nursing problem: care of pressure areas. Learners' perceptions of knowledge of specific life sciences required in order to provide nursing care. (n=165)

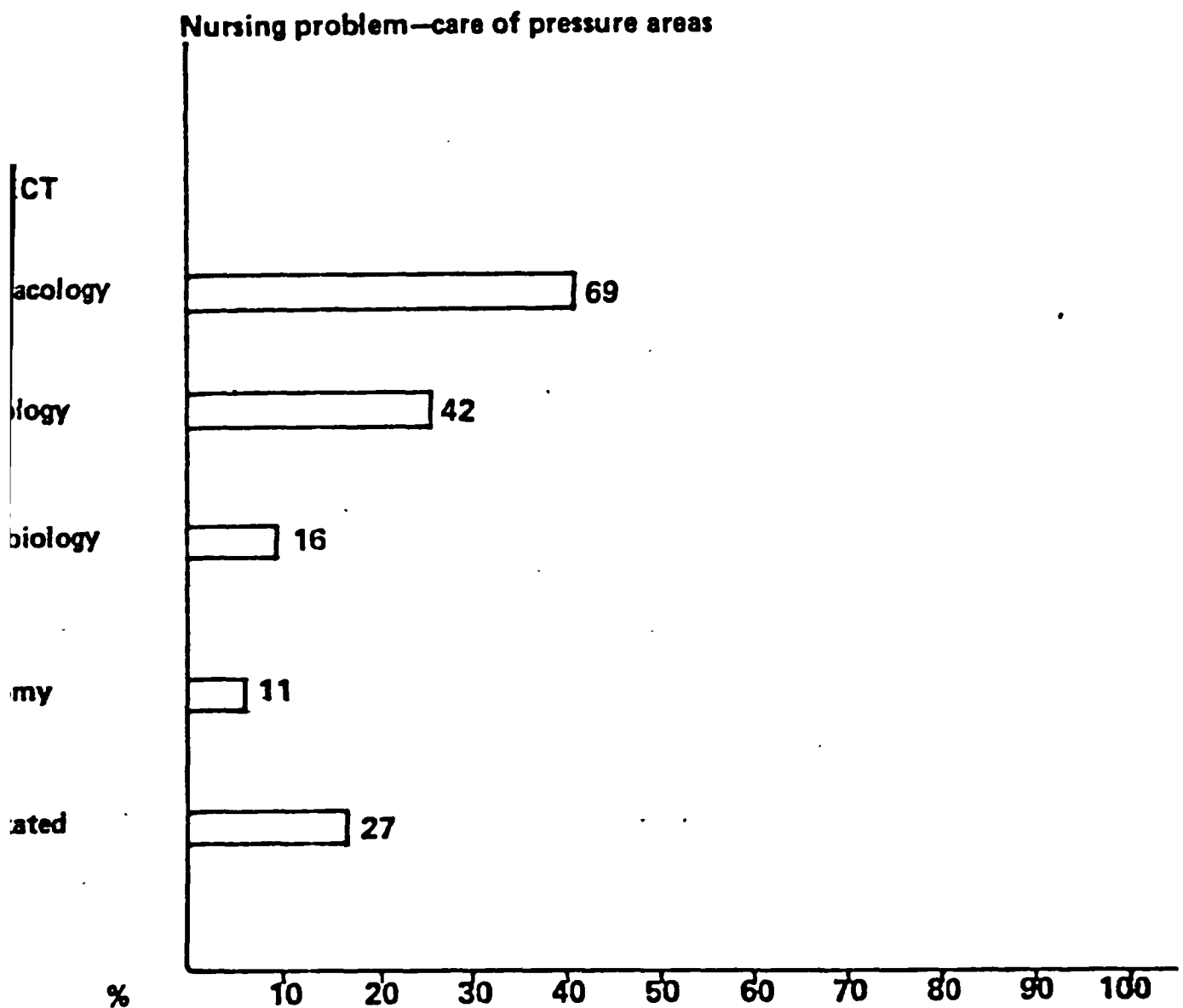


Figure 8:10

Nursing problem: feeding via nasogastric tube. Learners' perceptions of knowledge of specific life sciences required in order to provide nursing care. (n=165)

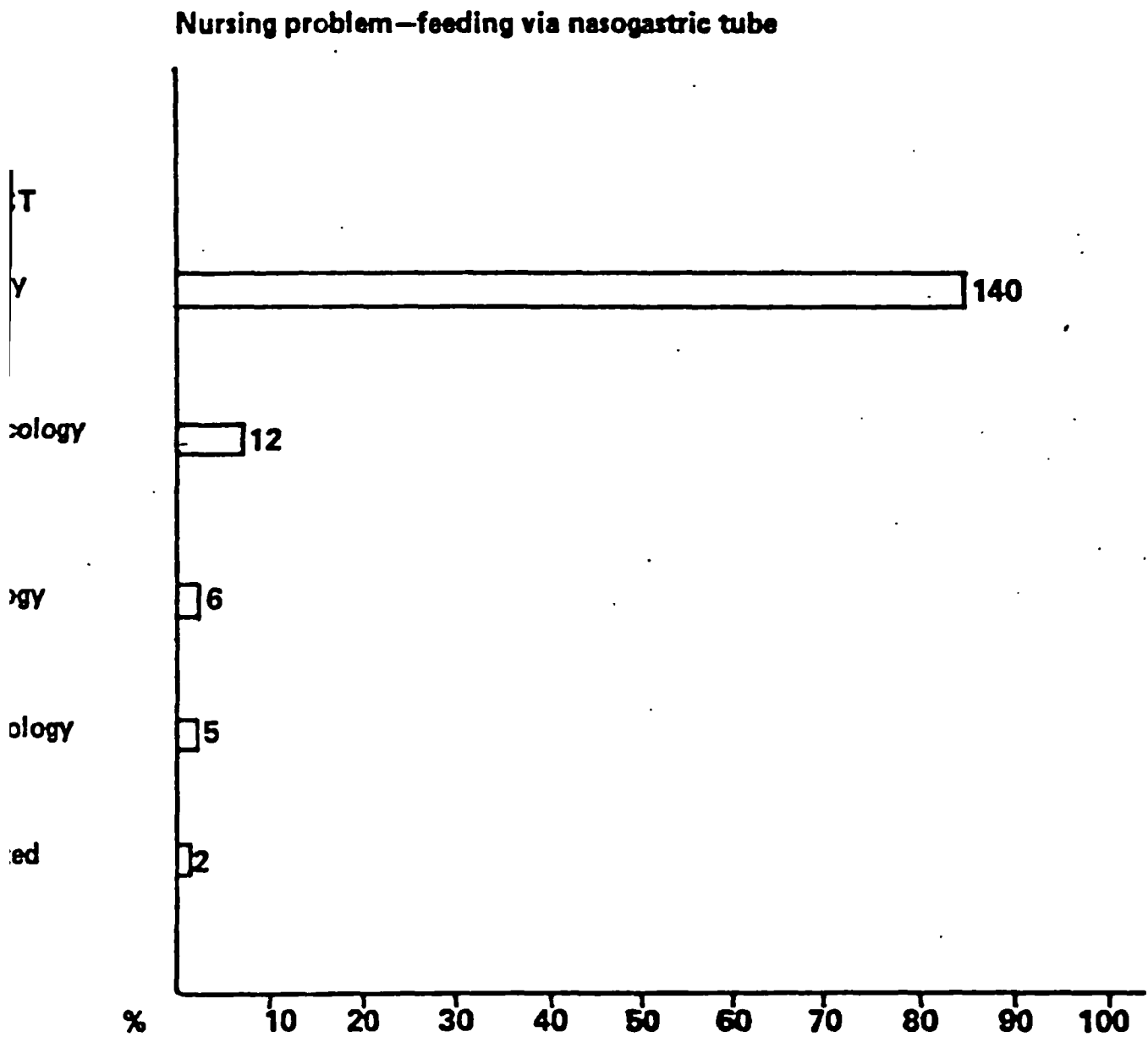


Figure 8:11

Nursing problem: dressing wounds. Learners' perceptions of knowledge of specific life sciences required in order to provide nursing care. (n=165)

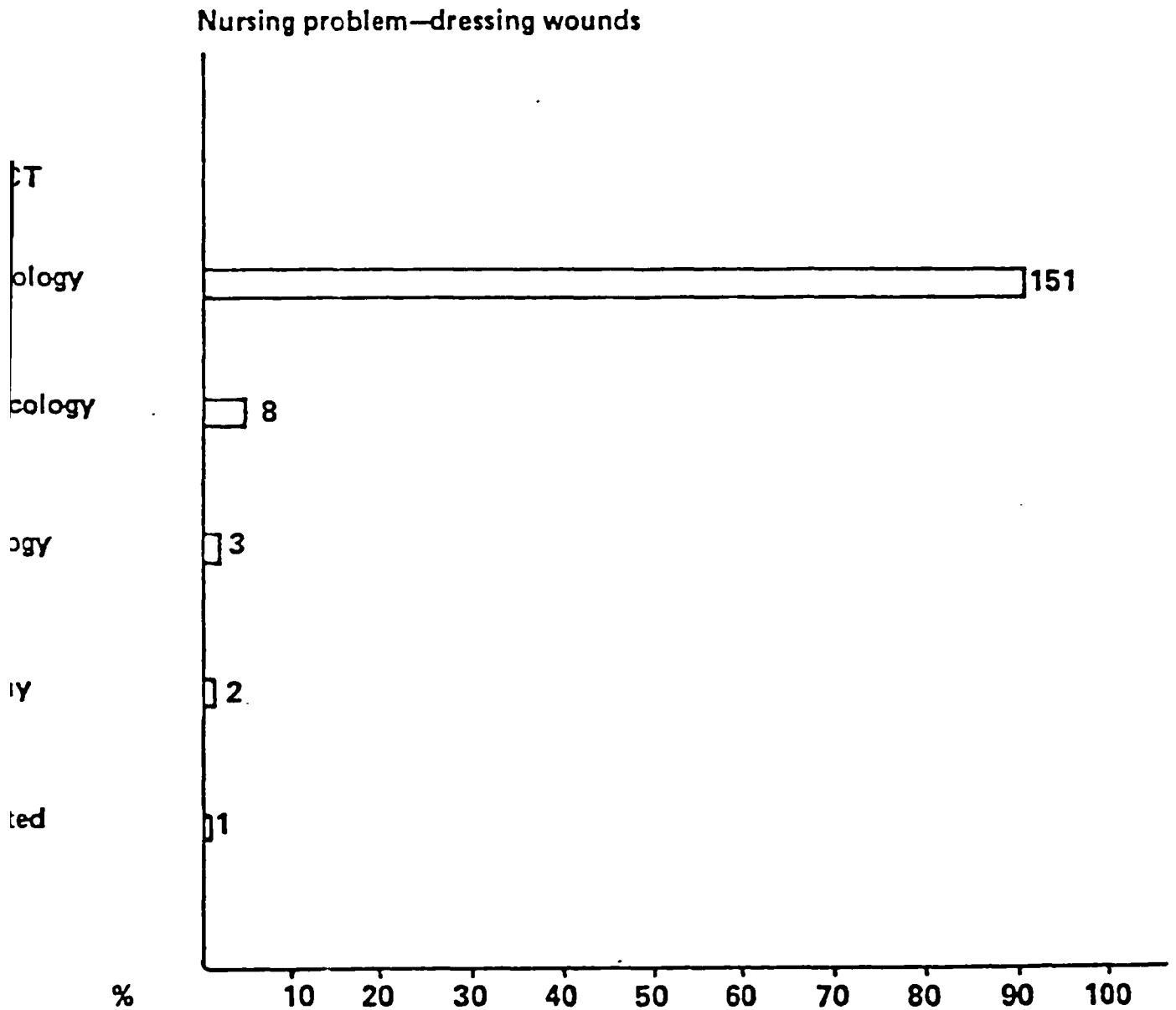


Figure 8:12

Nursing problem: testing urine. Learners' perceptions of knowledge of specific life sciences required in order to provide nursing care. (n=165)

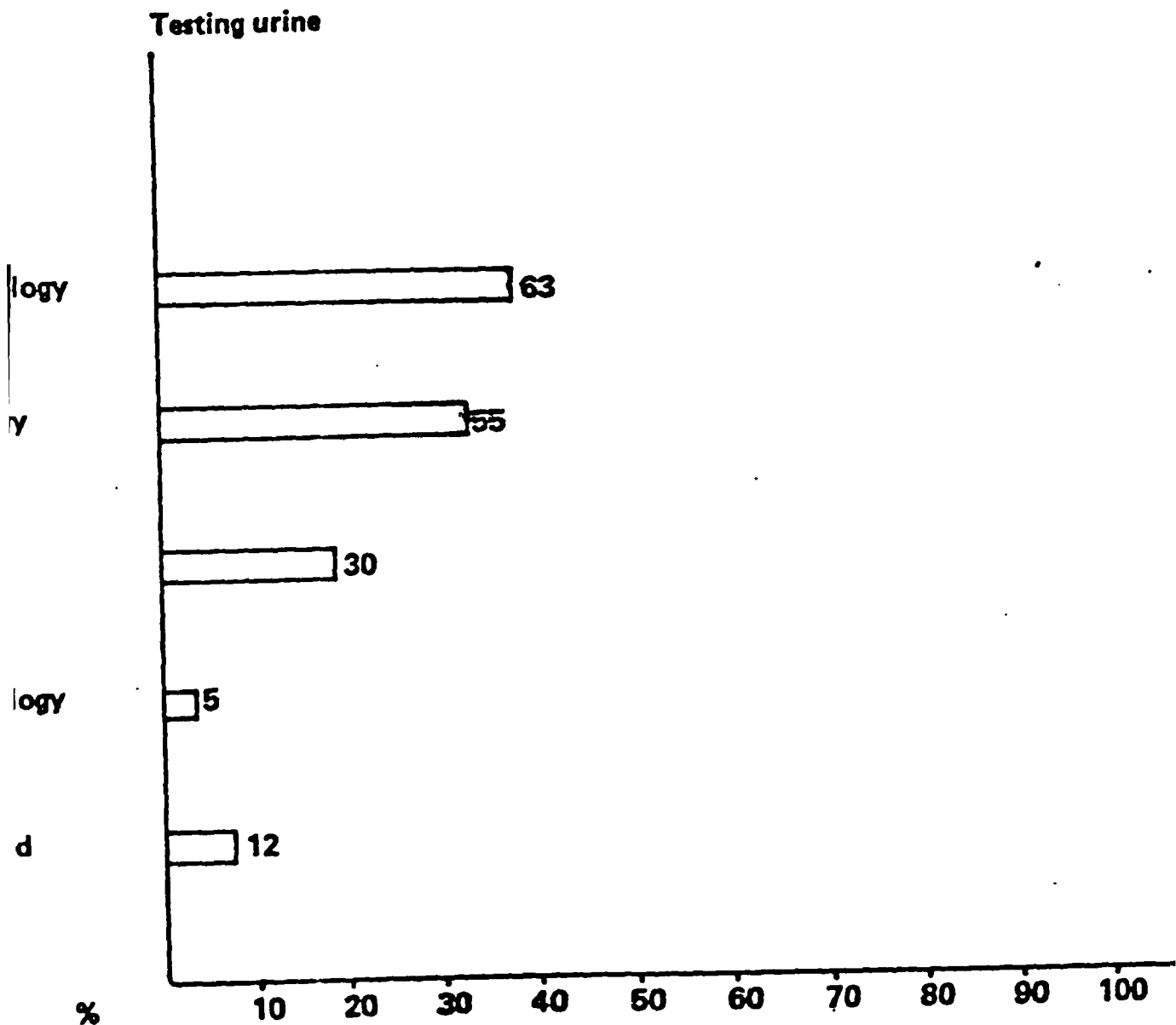


Figure 8:13

Nursing problem: giving and removing bedpans. Learners' perceptions of knowledge of the life sciences required in order to provide nursing care (n=165)

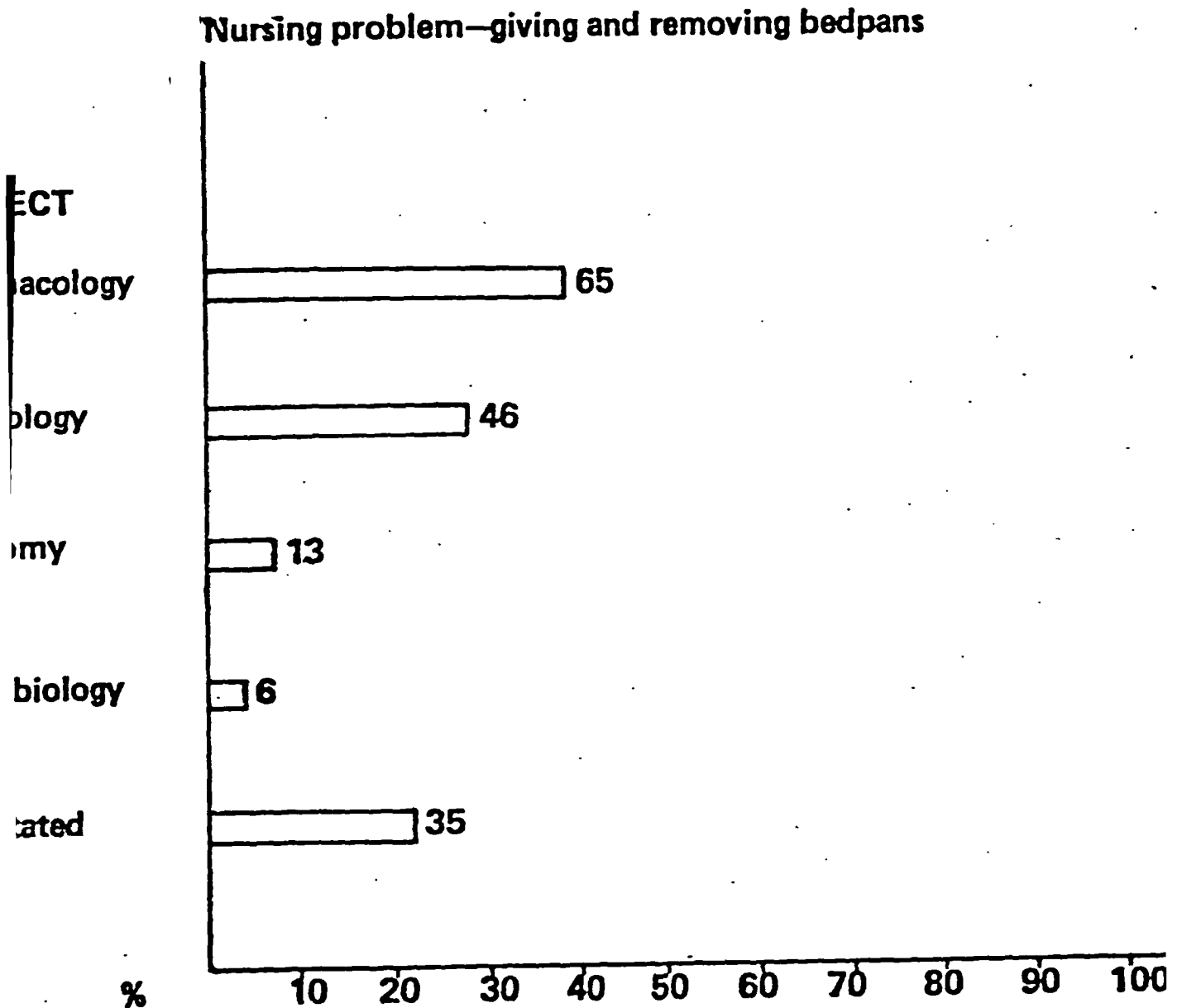


Figure 8:14

Nursing problem: administration of oxygen. Learners' perceptions of knowledge of specific life sciences required in order to provide nursing care (n=165)

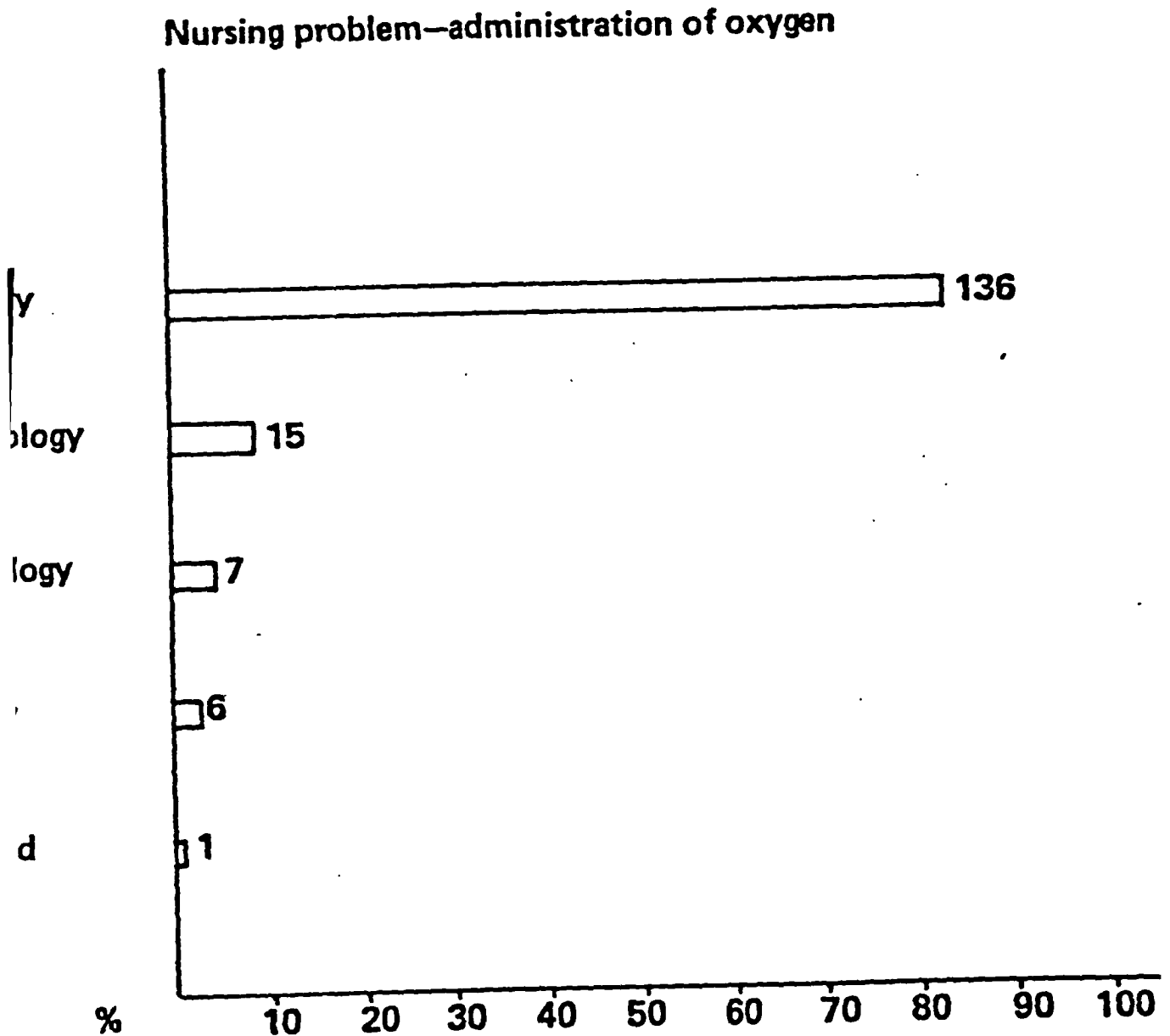


Figure 8:15

Nursing problem: giving an enematta. Learners' perceptions of knowledge of the life sciences required in order to provide nursing care. (n=165)

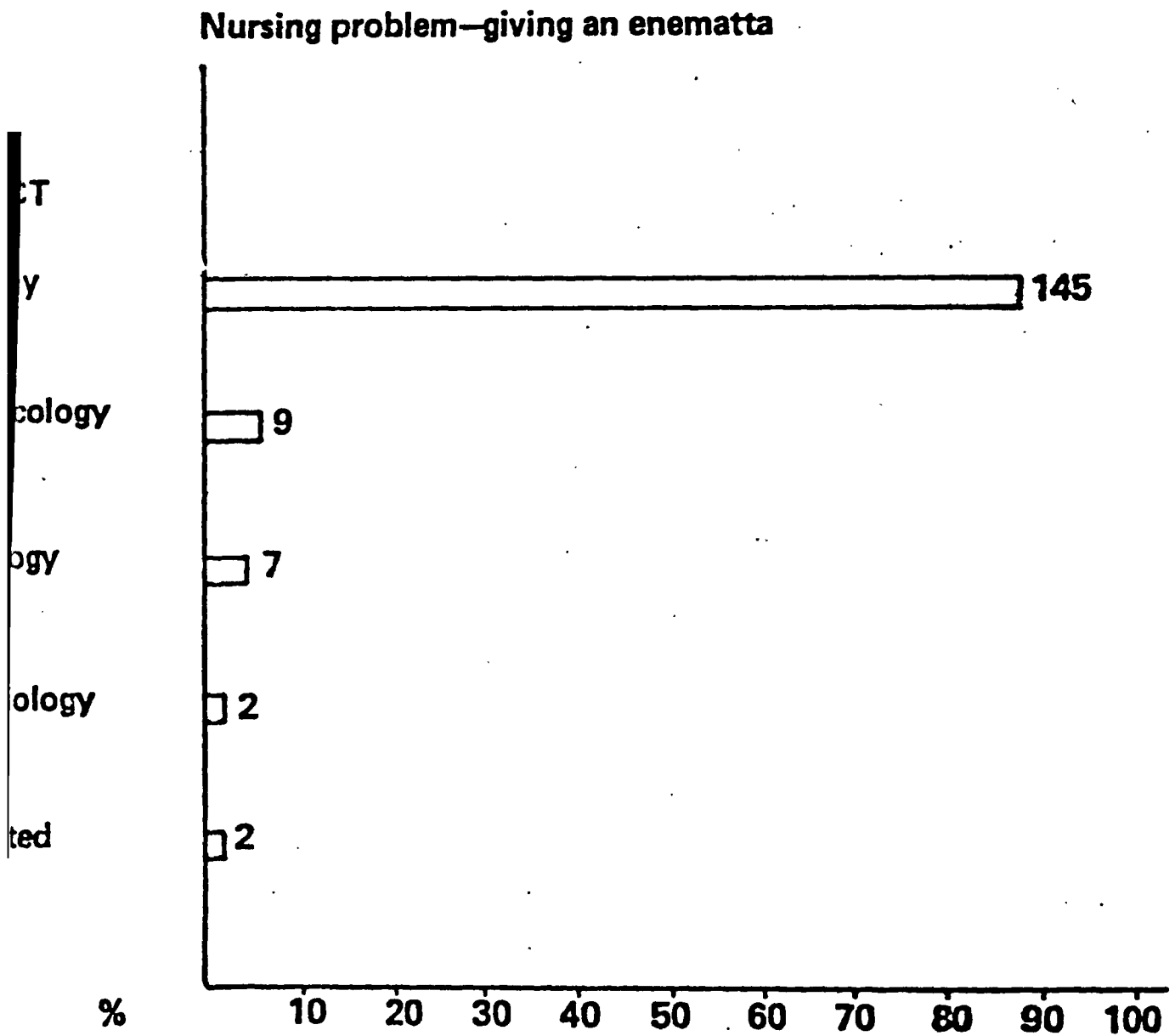


Figure 8:16

Nursing problem: explaining procedures to patients. Learners' perceptions of knowledge of specific life sciences required in order to provide nursing care (n=165)

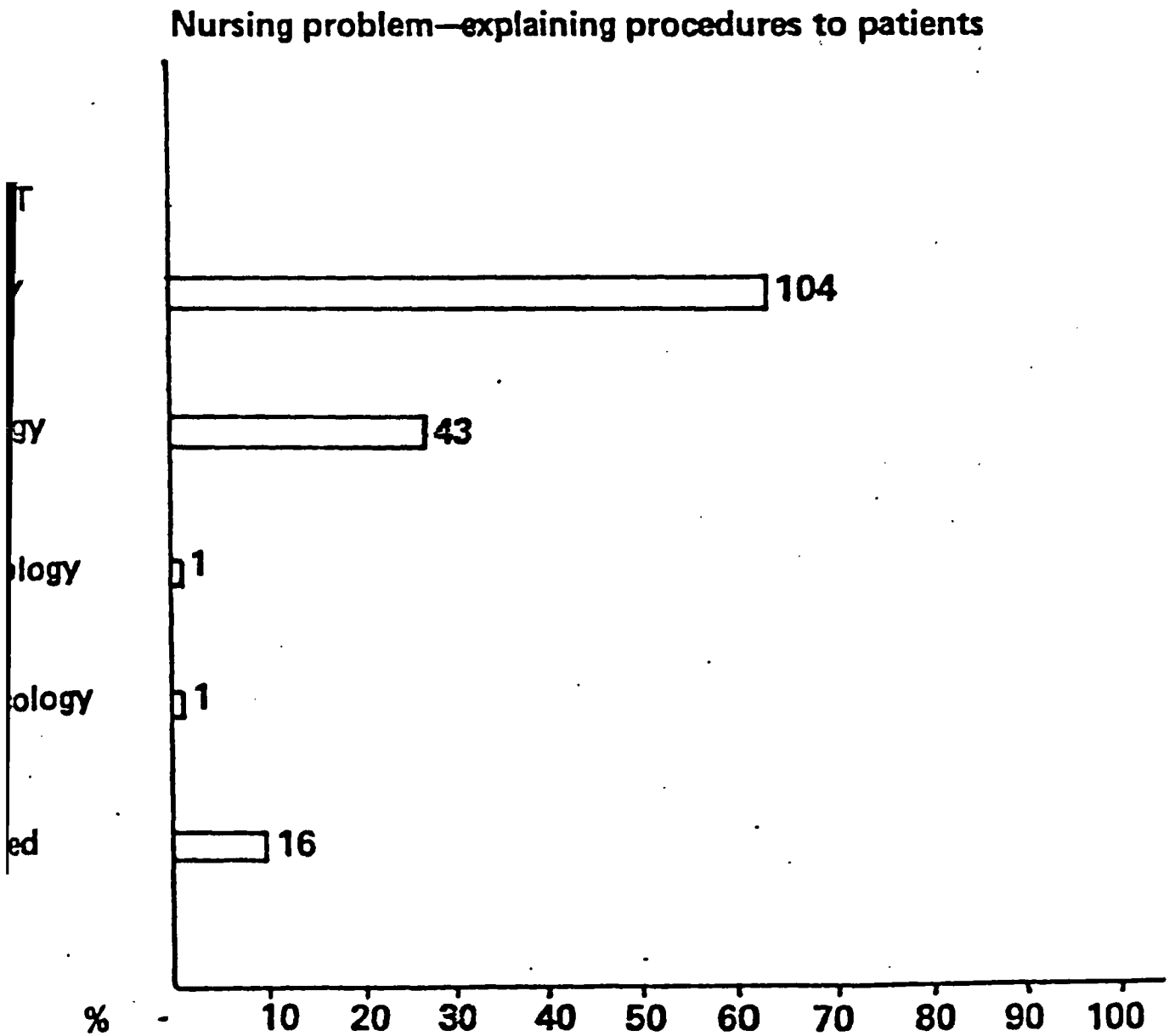


Figure 8:17

Nursing problem: giving oral care. Learners' perceptions of knowledge of specific life sciences required in order to provide care. (n=165)

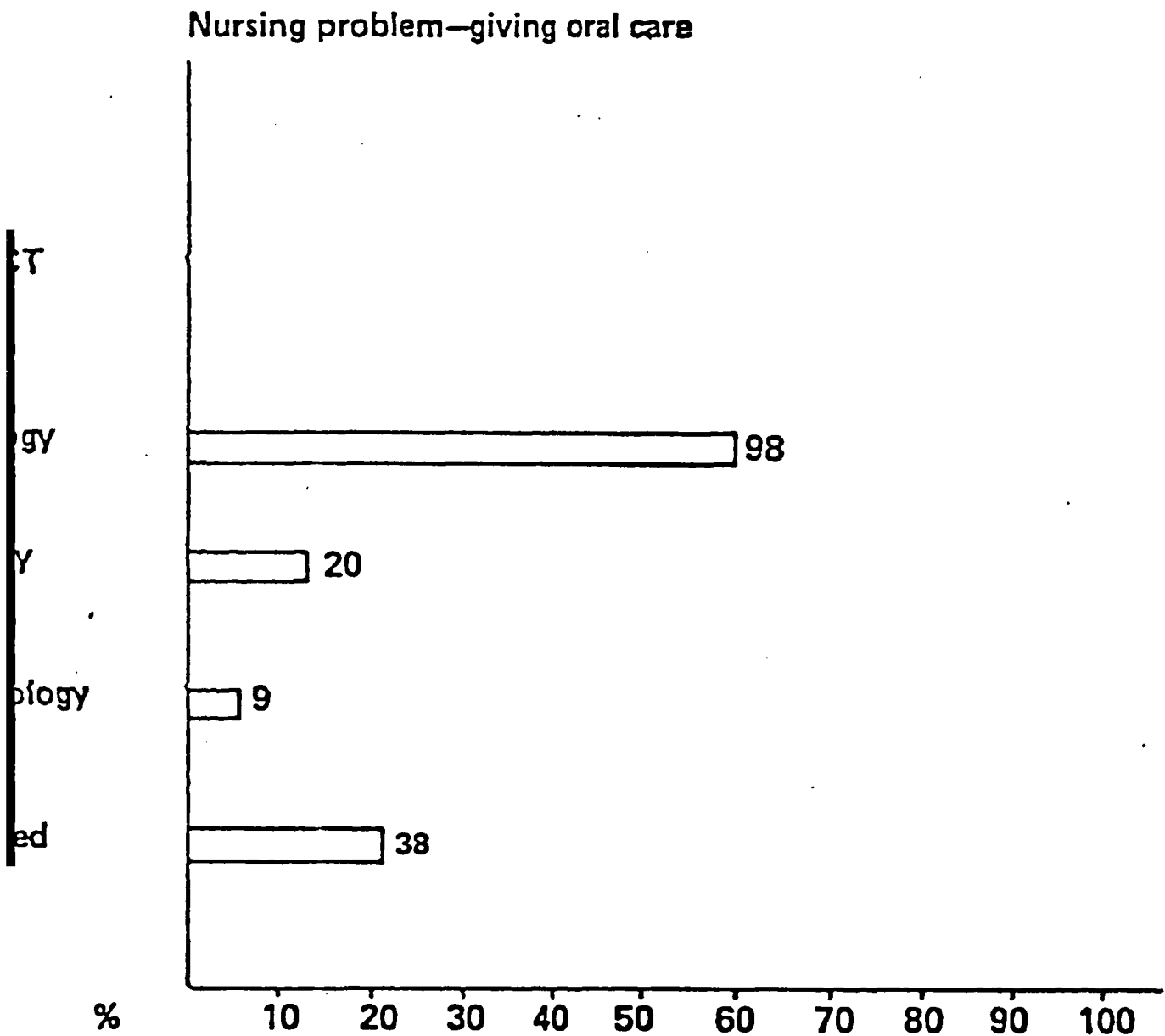
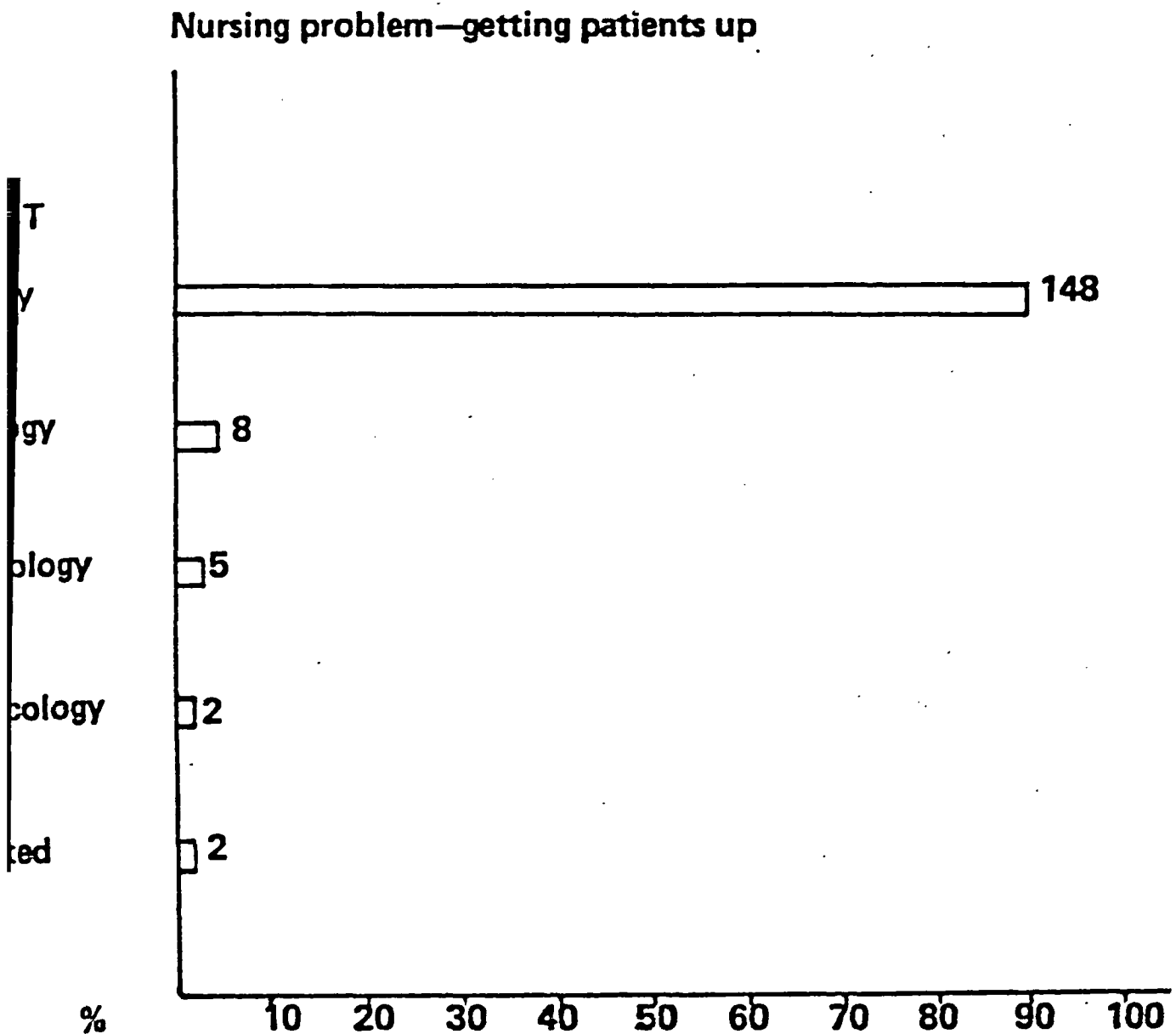


Figure 8:18

Nursing problem: getting patients up. Learners' perceptions of knowledge of specific life sciences required in order to provide nursing care. (n=165)



The learners' perceptions of knowledge of the life sciences

required for the performance of various nursing activities appear to suggest that these subjects are viewed as being important in their training. In the case of anatomy, for example, the results show that activities which would involve nurses in direct physical invasion of the body would require a perceived knowledge of this life science - 84.8% of rated it important for the passing of naso-gastric tube. Correspondingly, 87.9% for giving an enematta 63.0% for explaining procedures to patients and 89.7% for getting patients up. In all these activities, the physical condition of the individual is a major concern of the nurse and a knowledge of anatomy would be essential in orde to ensure safety in their care.

In the case of physiology, the following ratings reflect learners' perceptions of the need for a knowledge of the life science in the nursing care of patients. For taking and recording blood pressure, temperature, pulse and respiration, 93.9% of respondents perceived a knowledge of physiology as being important. For administration of oxygen, management of intravenous infusion and giving oral care, the corresponding ratings were 82.4%, 63.6% and 59.4% respectively.

It is interesting to note the result for pharmacology as perceived by learners. Clearly, administration of drugs is fundamental here and 89.7% rated a knowledge of this subject as being important in the performance of this nursing task. For the care of pressure areas, giving and removing bedpans and testing urine, 41.8%, 39.4% and 38.2% of learners

perceived a knowledge of pharmacology as being important. These results might be explained by the fact that pharmacological agents are sometimes used in the treatment of pressure necrosis while elimination and excretion of pharmacological end-products are the concern of the digestive and excretory systems in the body.

Finally, 97.6% of learners in this study not surprisingly perceived a knowledge of microbiology as being important for the dressing of wounds.

It can be argued that these results reflect a perceived need by the learners for knowledge, not just for its own sake, but for an understanding of the appropriate application of that knowledge of the life science which underpins a particular nursing procedure or activity. When the results are examined closely, it would seem that, in the case of anatomy, this knowledge is related to activities concerned with locomotory, gastro-intestinal and neurological nursing management of patients. Clearly, the ability to explain procedures to patients was perceived by respondents as being dependent upon an understanding of the relevant anatomical reasons for the patient's physical problems. The results for physiology also suggest a perceptive appreciation of the role of the monitoring functions of the nurse for body homeostasis. It should be noted that respondents rated natural, homeostatic body functions higher than those measures or activities designed to interfere directly with their malfunction such as the administration of oxygen. The emphasis placed on these routine activities on the wards would seem to be accepted as

important learning opportunities by respondents. In particular, it is important to note that recent textbooks for nurses have been based on this homeostatic approach to an understanding of body functions in relation to nursing intervention. (Akinsanya, 1980; Roper et al, 1981). This approach would provide an improved knowledge base for nursing practice and thereby improve communication between nurses on patient care (Lelean 1973).

8.41 Nursing-initiated procedures

A recurring issue in professional discussion is the question of the relation between theory and practice. A number of writers have argued that a nurse needs a knowledge base in the behavioural and life sciences for professional practice as noted in Chapters II and V. An important advantage for the professional in the possession of an appropriate knowledge base might be the ability to make certain independent judgements in initiating specific procedures without recourse to medical sanction. Such a judgement might have to be made in an emergency or as part of an agreed policy e.g. in areas of specialised nursing such as coronary care or intensive care units.

Although occasions when such decisions have to be made are necessarily limited, they nevertheless exist and the increasing delegation of some medical tasks to nurses would seem to suggest that such a trend will continue. Results in Table 8.4 suggest that learners in this study perceived the need for knowledge of the life sciences as being important for the performance of certain tasks. The question to be

addressed, therefore, was whether the need for such a knowledge in relation to specific procedures relating to the body systems could be initiated independently. For example, management of intravenous infusion requires a knowledge of the circulatory system while the act of getting a patient up would call for an appropriate knowledge of the locomotory system. Table 8:2 presents the result of learners' perceptions of the relation between the possession of an appropriate knowledge base and the professional ability of the nurse to initiate certain procedures related to body systems.

Table 8:2
Learners' Indication of Body Systems for Which the Nurse
Might Initiate Independent Nursing Action based on a
Knowledge of the Life Sciences In Order of Importance (n=165)
Q.3

Body System*	Number	%
Circulatory System	131	79.4
Locomotory System	117	70.9
Alimentary System	91	55.2
Nervous System	78	47.3
Respiratory System	61	37.0

*Related to nursing activities. One respondent may indicate more than one system.

The order of ranking suggests that existing areas of direct nursing intervention probably influenced respondents.

For instance, taking and recording blood pressure or arresting haemorrhage would be procedures which a nurse might initiate independently of medical prescription if

professional judgement suggests a need for action. Similarly orthopaedic nurses, concerned with locomotory problems, might exercise a certain degree of independent action in the light of a patient's immediate needs without awaiting medical prescription. Thus emergency splinting of fractures or the application of bandages to support injured joints are two examples of such actions which depend on the professional nurse's knowledge and independent judgement. It could also be argued that the alimentary tract lends itself to a similar considerations in that certain actions may be taken independently of the physician. Examples are relief from impacted faeces in the elderly constipated and certain dietary action to assist natural defecation such as increase in fibre intake and help with exercise.

The effect of such actions in these examples are in general free from life-threatening danger and could in fact avoid or prevent such a possibility. The nervous and respiratory systems, ranked lower by respondents, are clearly areas in which rapid life-threatening consequences could arise in response to a variety of interventions. It could therefore be argued that the perceived limitation to the ability of the professional, knowledgeable nurse to take independent actions in relation to these systems represent a cautious approach to professional action. Nevertheless, it must be noted that where nurses have been properly prepared for responsibilities in actions related to these systems, independent intervention (under medical cover) could be initiated. The important point is that the nurse must have an appropriate knowledge and an understanding of concepts and principles in order to decide

when action should be taken or avoided when applying such a knowledge in practice.

8.42 Distinction between 'bionursing' and biomedical approaches to patient care -----

The theoretical framework of this study (Chapter V) is based on the belief that a distinction can be made between the application of concepts and principles from the life sciences in nursing and medicine respectively. The idea that nursing is characterised by the concept of 'care' while medicine is concerned with 'cure' is perhaps a simplistic interpretation of what the two professions are doing in practice. It would be difficult to sustain such a position as a serious argument as some have suggested (Henderson 1966; Roper et al 1981). What this thesis argues (Chapter V) is that knowledge derived from the life sciences might be used differently, thus necessitating differences in the educational and training approaches of nursing and medicine and the nature of the professional orientation and intervention which nurses and doctors decide in practice (Lynaugh and Bates 1973). Hence it can be argued that nursing activities are predominantly 'macro' in nature, often not invasive of body cavities while medical intervention, whether by means of pharmacological or microbial agents or even direct surgery, operate at the 'micro' level in which interventions directly affect cellular structure and function.

Thus the term 'bicnursing' was coined by Hayward (1979) to account for such a distinction. In this study, learners were

Table 8:3

Indication of the Distinction Between the Terms 'Bionursing' and 'Biomedical' and the Usefulness of such a Distinction for Nursing (Q.4)

training	Term is useful		Term is not useful		Don't Know	
	(n=95)*		(n=30)*		(n=40)*	
	n	%	n	%	n	%
Year Learners	42	53.2	15	19.0	22	27.9
Year Learners	39	73.6	7	13.2	7	13.2
Year Learners	15	45.5	8	24.2	10	30.3

espondents

From Table 8:3, it can be seen that (96) i.e. 58.2% of the learners considered the suggested term a useful one for a distinctive link between nursing and the life sciences. On the other hand, 23.6% (n=39) were undecided while 18.2% (n=30) considered the term unhelpful as defined.

In terms of the individual group, students in the second year seem to have given the most support to the use of the term while those in the pre-registration year were supportive.

In addition, comments were invited in support of the choice of answer and these were content-analysed under three categories as follows:

- a) Statements which reflect a medical orientation i.e. supportive of the biomedical approach (Category A)
- b) Statements which reflect the view that a distinction can be made between medicine and nursing as regards derivation of the life sciences knowledge base (Category B).
- c) Statements which reflect either a failure to understand the nature of the question and the issue it raises, or inability to make the distinction between the terms (Category C)

A close examination of the comments reveal considerable individual regard for the roles of doctors and nurses. In particular, those who answered 'yes' apparently found no difficulty with the use of the term as shown by their comments. Typical examples of the views of those who disagreed are shown in Table 8:4.

Table 8:4

Categorised examples of respondents' comments by year of training

CATEGORY A

I still fail to understand the need to analyse nursing in such scientific depth. Nursing to me means caring for a person or carrying out of activities which, through disease or disablement they are necessarily incapable of, and the continued help through the progression back to being able to cope for themselves if possible (2nd year student).

CATEGORY B

Although a biomedical knowledge is necessary to some extent, its theories need to be applied to nursing. Bionursing gives the process of nursing a degree of scientific respect which the nursing profession vitally needs (1st year student)

CATEGORY C

Nurses presently are just maids elevated to a cap and uniform and the golden name 'nurse' (3rd year student).

It was a completely new concept until today but it is good for us to think about nursing and teaching it in other ways than at present (2nd year student)

These comments and others expressed during post-questionnaire completion discussion would seem to suggest that, as learners, it was perhaps inevitable that some difficulties would arise in attempts to answer the question. It will be recalled that in Wilson's (1975) study, even staff nurses reportedly experienced considerable difficulty in identifying the role of the biological sciences in nursing practice. It can be argued therefore that the responses of learners above may indicate deficiencies in understanding which may be reduced by a clearer sense of purpose in their teaching.

As noted above, the relation between theory and practice is an important issue in this thesis. But while some practitioners may welcome a theoretical discussion on how to

improve professional education, it is important that direct relevance be seen in such theoretical proposals.

An additional item for canvassing the views of learners on the use of the life sciences in nursing was a list of nursing activities which were recorded from the ward observations (Chapter VI). Respondents were required to rank these nursing activities in order of the level and depth of knowledge of the life sciences that would be required for their performance. The result is presented in Figure 8:19.

Figure 8:19
Learners' Indication of the Level of Knowledge of the Life Sciences required for the Performance of Specified Nursing Activities

Code + Ranking order by learners*

01	Care of the unconscious
02	Management of IV* infusion
03	Administration of drugs+
04	Giving information to patients and relatives
05	Preparation of patients for special tests
06	Discussing patients' progress with medical staff
07	Catheterising patients
08	Assisting medical staff with procedures
09	Dressing wounds
10	Oral hygiene
11	Passing nasogastric tube
12	Explaining procedures to patients
13	Administration of oxygen
14	Gastric aspiration
15	Recording intake and output of fluids
16	Getting patient up
17	Care of pressure areas
18	Testing urine
19	Giving an enema
20	Taking blood pressure, temperature, pulse and respiration
21	Sterilisation of instruments
22	Performance of last offices
23	Care of linen and equipment
24	Routine bedmaking (unoccupied bed)
25	Giving and removing bottles and bedpans

* The higher the ranking, the higher the perceived level of knowledge of the life sciences required by the nurse in order to perform the identified activity. A lower ranking reflects perceived lower level knowledge of the life sciences required by the nurse for the stated activity.

The ranking order in Figure 8:19 suggests a hierarchy of importance of the level and depth of knowledge of the life sciences required by nurses in the performance of these activities as perceived by learners. As was noted above,

activities which involve the nervous system appeared to be the least amenable to independent nursing action. Thus it might be that the above ranking of care of the unconscious reflects this view. On the other hand, taking and recording blood pressure, temperature, pulse and respiration was rated above giving and removing bottles and bedpans - an unexpected finding in view of the important knowledge demands for the performance of these professional activities.

8.5 Discussion

These results, when examined against the background of the main research questions, provide a guide to some aspects of learners' perceptions of the role of the life sciences in their education. The research questions can therefore be answered as follows:

1. In this study, learners reported difficulties with some aspects of learning associated with the life sciences. In particular, microbiology was noted by about half of the respondents as being difficult to learn. This is perhaps to be expected considering the evidence from the studies of Nolan (1973) and Wilson (1975) and a corresponding Canadian study (Murray 1973) reported learners' inability to appreciate the necessity for a knowledge of microbiology. As Murray reported, respondents (n=18) considered the subject irrelevant to their practice.

Learners in the present study were asked only to identify the

relevant life science and not to demonstrate understanding of its application in practice. This is an important difference which would have had to be resolved had the decision not been taken to explore perceptions at three levels, and to focus on nurse teachers. A line had to be drawn at some point in the empirical study but this aspectt would be worth investigating in the future.

2. Professional responsibility for the initiation of nursing activities could be important in life saving situations where medical intervention might not be readily available.

Respondents identified a number of such nursing procedures which could be initiated independently by the nurse with the appropriate knowledge and understanding of the underlying life sciences. The range of nursing procedures and activities identified by respondents as lying within the professional competence of the nurse to initiate appropriate action represent, at best, shared areas of medical/nursing decision-making. These are areas of practice where the knowledgeable, skilful and competent nurse would normally be allowed to operate with minimal medical surveillance. With learners, there may well be a degree of uncertainty here for it is likely that they will report as desirable that which they see on the wards, and to imbue it all with the high standards of discipline expected of nurses in carrying out their tasks. The comments of experienced, qualified nurses will therefore be far more relevant. In all cases, however,

much will depend on the extent to which an individual has been able to reflect upon questions of professional responsibility. Learners, even those in the immediate pre-registration period, are perhaps lacking in the experiences which will make such judgements feasible.

As already argued above, in the dramatic and urgent arena of critical acute medical/nursing, doctors and nurses are closely involved in decision-making which often depend on knowledge and understanding of the life sciences for both professional groups. Nevertheless, there are certain emergency situations in which the nurse is required to take appropriate action in the interest of patient safety whilst waiting for the doctor. It should be noted, however, that in the less acute and dramatic setting of geriatric or mental/mental handicap nursing, the ability of the nurse to exercise a certain amount of independent judgement and initiate relevant interventions are tacitly acknowledged by medical staff (McFarlane & Castledine 1982). Nevertheless, as Leggatt (1972) notes, knowledge forms the basis upon which professional groups have access to, and are able to take decisions about, the health problems of individuals. It is therefore important that knowledge of the life sciences as a basis for professional practice in nursing should be reflected in curriculum development.

3. The reliance of nursing on medicine for knowledge derived from the life sciences has been a fact of professional nursing education for a long

time. The finding of this study suggests that respondents, even at the level of learners, perceived a distinction between a medical knowledge derived from these sciences and that which is distinctively nursing. Although some respondents were anxious lest nursing and medicine become polarised, they nevertheless saw the introduction of the term 'bionursing' as a useful way forward in the quest for the definition of nursing and its knowledge base in the life sciences.

8.6 Conclusions

The evidence from this stage of the study, though of considerable interest in the development of ideas, remains inconclusive. If the theory/practice link has not been identified in lectures, and made clear in practice in clinical situations (as evidenced by Alexander's 1983 study), it is, perhaps, unrealistic to read too much into the answers of learners who have had little time to reorientate their thinking, and to reflect upon the implications of a 'bionursing' model approach. It may be that qualified nurses (e.g. staff nurses and sisters) would have provided an informed view of the problem. However, it is at the level of the learner that the most difficult conceptual issues are grappled with (Heasman 1981).

The results suggest that learners' anxieties and uncertainties in relation to the role of the life sciences in nursing and nurse education may be less a matter of basic scientific knowledge (they are generally better qualified to

cope with the demands of a biologically based course in nursing) than a matter of input, both theoretical and applied, and the development of real understanding of the reasons for their actions.

What emerges from these considerations, therefore, is the need for a closer examination of the way the life sciences are perceived by those being prepared to teach learners these subjects - the nurse tutor students. The views of those responsible for their preparation (course directors/tutors) would also throw some light on the problem. For it might be that the teacher training level is where fundamental changes will need to be made first if the contribution of the life sciences to nursing education is to become more effective. A study of the existing courses for the preparation of nurse tutors would therefore be the starting point for further development. These aspects are reported in Chapters IX and X.

CHAPTER NINE

CHAPTER OUTLINE

PART III

THE MAIN STUDIES

CHAPTER IX

THE LIFE SCIENCES AND THE PREPARATION OF NURSE TUTORS:
 PERCEPTIONS OF NURSE TUTOR STUDENTS
 (Stage IIA)

- 9.1 Introduction
- 9.2 Questionnaire design
- 9.3 The role of the DHSS advisory panel
- 9.31 Validity of the instrument
- 9.4 Data collection
- 9.41 The sample
- 9.42 Returns
- 9.5 Data analysis
- 9.6 Findings and discussion
- 9.61 Personal characteristics
- 9.62 The life sciences and the teacher of nurses: students' perceptions
- 9.63 Teaching demands made on students
- 9.64 Teaching practice experience of students
- 9.65 Clinical and general contacts with learners during teaching practice
- 9.66 The life sciences and clinical performance: theory/practice link
- 9.67 Problems of anxiety and nurse tutor students
- 9.7 Conclusions

CHAPTER IX

THE LIFE SCIENCES AND THE PREPARATION OF NURSE
TUTORS: PERCEPTIONS OF NURSE TUTOR STUDENTS (STAGE IIA)9.1 Introduction

The empirical work so far reported is an attempt to relate the learning of the life sciences to the educational background of learners and their clinical experiences on the wards. The exploratory study in Chapter VI shows that at the very beginning of their introduction to ward practice, newly recruited learners are expected to be conversant with, and to demonstrate ability to use, the life sciences. It was also clear that learners themselves see a knowledge and an understanding of these subjects as being important to their professional competence and the safety of the patients under their care. The demonstration of these relationships in the exploratory and preliminary studies (Chapters VI and VIII) would seem to confirm the reliance placed on nurse tutors by the profession for the transmission of knowledge appropriate for the safety of patients and the professional competence of the nurse which underpins it. Additionally, the teaching of the life sciences in schools of nursing is open and explicit whereas their application in the clinical areas is implicit in the performance of nursing tasks. For these reasons, it was considered appropriate to study nurse tutor students' preparation for the important function of transmitting knowledge from the life sciences to learners in the largely theoretical surroundings of the school of nursing.

The aim of the study therefore was to obtain the views of nurse tutor students on the role of the life sciences in nursing and in their own preparation as teachers. Specifically, the following questions were addressed:-

1. Whether the total exclusion of the life sciences as formal subjects in courses preparing nurse tutors is likely to affect their later ability to teach the subjects.
2. Whether nurse tutor students were themselves sufficiently prepared professionally before undertaking the course of preparation as future teachers of the life sciences.

9.2 Questionnaire Design

Following the review of methodological issues (Chapter VII), it was decided to use a postal questionnaire for the study. It was hoped that an appropriately worded questionnaire would explore various aspects of the students' preparation as future teachers of the life sciences. Attempts were made to obtain existing, validated questionnaires related to the subject of the study. There is a dearth of research instruments in this area but Lancaster's (1972) questionnaire was useful in that it provided information on qualified nurse tutors' views of their preparation. However, it could not be replicated partly because it addressed the issue from the point of view of qualified tutors and partly because its central concern was not specifically the life sciences. On the other hand, Wilson's (1975) 19-item questionnaire on the

role of the biological sciences in professional nursing was addressed to doctors and was open-ended. Thus in the absence of an appropriately standardised and validated instrument for replication, it was necessary to develop one for the study.

9.3 The role of the DHSS advisory panel

As part of the funding arrangement for the study, an advisory panel of the DHSS was constituted as follows:-

1. A professor of nursing studies and supervisor of the study.
2. A senior lecturer in education interested in biological education and curriculum development.
3. A director of nurse education in a teaching hospital health district.
4. A professor of education with an interest in nursing.
5. A nursing officer (research) at the DHSS.

Development of the questionnaire was undertaken by the researcher. Items were selected which reflected the information sought on specific areas of the investigation and all items, taken together, covered issues that had featured in recent official and professional discussions on nurse teachers and their preparation for that role. The items were classified in order to allow for grouping of areas in order to ensure a logical sequence in the questionnaire which covered the following areas:

1. Personal background (anonymous), qualifications, experience, education and gender.
2. Own specific knowledge of the life sciences e.g. relevant post-registration courses such as the Diploma in Nursing of the University of London.
3. Perceptions of the contribution of the life sciences in relation to the preparation of teachers of nurses. In particular the background knowledge before entry; inclusion during the course and the uses of such knowledge in nursing generally and for practice teaching.
4. Criteria for the selection of life sciences concepts into their own teaching i.e. whether there is a hierarchical order of importance for some areas rather than others.
5. Influence of the GNC (1977) Syllabus on the life sciences teaching in nursing and that of other nursing educational and research publications and resource materials on the life sciences contents of lesson plans. What guidance is available to students?
6. Any particular views on specialisation by tutors when in training and later when qualified and in posts. If specialisation is in the life sciences or aspects of them, would further preparation be required?
7. Nursing activities and students' perceptions of the need for a knowledge of the life sciences in learners and the qualified nurse.

Following the meeting of the advisory panel at which these items were discussed, a draft questionnaire was prepared. The initial draft was submitted for comments from experienced researchers within the department (n=6). Statistical advice

was obtained on coding and analysis and the instrument was piloted by submitting it to two directors of nurse education (DNE), three senior tutors, two qualified tutors and a social scientist currently involved in a national survey. A copy of the draft questionnaire was taken and discussed with a member of staff of the GNC with responsibility for teacher education.

Two important considerations emerged from this exercise:-

1. The need for an introduction to each item in order to clarify the nature of the information required was noted. For instance, on the item concerned with 'age', an introductory remark could be in the form: "It has been suggested that people are attracted to a career in teaching much later in their professional life.." While such a clarification might help respondents to focus their answers more closely, it was felt that the length of the questionnaire would be needlessly increased. Accordingly, it was decided to omit these remarks.
2. It would be possible to set frames of reference within the wording of each item. The use of Likert-type items formed the major approach which required respondents to 'list', 'tick' or 'categorise' items.

Allowance was made for free comments at the end of each item, thus respondents would have the opportunity to provide additional support for their choices. At this stage, it was

also important to consider the form that later analysis would take. For this reason, dummy tabulations were produced and possible methods of analysis considered. This was a useful exercise in that it exposed areas of likely difficulty in subsequent analysis and enabled possible relationships between expected data to be considered.

Following these post-pilot considerations, the researcher re-drafted the questionnaire with additional items. For instance, in considering items on areas of nursing activities identified by learners (Chapter VI), an attempt was made to establish the extent to which nurse tutor students saw these as essential areas, in which knowledge of the life sciences was essential for safe practice. The perceptions of students in this area was regarded as particularly important because, as future teachers, they would apply knowledge derived from the life sciences to their lessons. Another aspect of interest which emerged from the piloting was the question of whether or not students might experience anxiety due to inadequate knowledge of the life sciences when teaching. Lancaster (1972) reported that when tutors lacked or perceived a lack of adequate knowledge of the biological (life) sciences, it could be dangerous to require them to teach learners in these subjects. Another researcher (Sheahan 1981) regards teaching the life sciences as the second most important function of nurse tutors. Sheahan studied the teaching practice experiences of tutor students in one institution and analysed 439 assessed lessons. He found that students were required to teach these subjects more often

than any other subjects apart from what he categorises as 'nursing.'

37.1% of assessed lessons were in this category while 27.3% were in the category labelled 'physiology' which includes the life sciences. However, even the category labelled 'medicine' (12.98%) contains a substantial life sciences underpinning as defined in this study. This supports the often-acknowledged view that the life sciences are the core of much of the expertise which the nurse tutor offers learners in the school.

Whatever the subject that is taught, however, the use of modern educational techniques will be important for effective transmission of knowledge to learners. Beard et al (1978) and Boothroyd (1979) argue that the uses of modern innovative methods are important in the transmission of knowledge but it is crucial that the teacher should be in the possession of the knowledge to be transmitted. The introduction of one-year courses has placed nurse tutor preparation into a 'methods' only sphere and previous knowledge of the life sciences is assumed in tutor students. The balance of evidence from the literature suggests that this remains a problematical situation in nursing (Lancaster 1972; The James Report 1972; Sims 1976; GNC 1975). It was therefore decided to include questions on this issue.

Although the study focuses on the life sciences, it was considered desirable to include aspects of teacher preparation related to the behavioural sciences i.e. psychology and sociology since they form part of the overall

scientific background required of nurses. These subjects had featured in the learners' "Science Test" survey (Chapter VI) and were therefore included in the nurse tutor students' study. For instance, Sheahan's (1981) analysis of observed teaching practice lessons revealed that only 2.9% of such lessons were concerned with the teaching of psychology while 1.3% were on sociology. However, these were largely taught by students from psychiatric and mental handicap fields whereas the life sciences were taught by all students. It was hoped to obtain information that would show the extent to which respondents were involved in such teaching commitments during their courses.

These and related issues were considered in the re-design of the questionnaire. Thus the information to be sought, the items to be included in order to obtain it, the sequence of the items and changes necessary following piloting were all carefully determined. A final draft was piloted in two schools of nursing with senior tutors (n=2) and nurse tutors (n=6) who commented on it. The main problem highlighted at this stage was the need to improve itemisation format and the coding of some of the questions. The advisory panel met and considered the final draft and the covering letter. The 26-item questionnaire and covering letter were approved for use (Appendixes 5 and 6).

9.31 Validity of the instrument

The process of establishing the validity of the new instrument was given careful consideration by the researcher.

The advisory panel acted as an important means of establishing face and content validity of the instrument. The overall format and presentation of the questionnaire was judged by the panel and its face and content validity agreed. However, internal validity was judged directly by reference to the main objectives of the study which was to describe the role of the life sciences in nurse tutor preparation. This view reflects much of what is available in the literature on the subject and Fox (1976) warns:

Unless a criterion is available which in itself is a reliable and valid measure of the characteristic under study, then these efforts to obtain a statistical estimate of validity of the new instrument are only academic exercises and provide no meaningful evidence of validity.

It should be noted that, in the terminology of survey literature (Moser and Kalton 1977), there is distinction between asking for opinions (as in this study) and measuring attitudes. In opinion surveys, reliability depends on the quality of the question design, and this was ensured by the close examination of comments received after the first draft, the piloting, the re-draft and the advisory panel's views.

9.4 Data Collection

An initial contact with the GNC resulted in a list of all the ten institutions where nurse tutors are prepared in England and Wales. An initial letter was sent to all course directors by the research supervisor explaining the nature of the study and requesting the names of students enrolled for the session 1979-1980 at each centre. A 100% response was recorded from

all institutions which comprised:

- 1 University Department of Education
- 1 College of Nursing
- 4 Polytechnics
- 4 Colleges of Further and Higher Education

Because of the timing of the study, it was decided to carry out the survey in two separate halves i.e. one at the end of the course (May 1980) when students would have had teaching practice, and the other at the beginning of the following academic year (September 1980) before teaching practices were undertaken. Questions on teaching practice were therefore deleted from the questionnaires for the September 1980 group.

Questionnaires were addressed individually to each student from the lists provided by course directors. All questionnaires for each institution were despatched in one envelope directly to the course director for distribution to the the students by previous agreement. Over the two periods of the survey, a total of 378 questionnaires were forwarded to course directors in the ten institutions in England and Wales. Stamped addressed envelopes were enclosed together with a covering letter (Appendix 5).

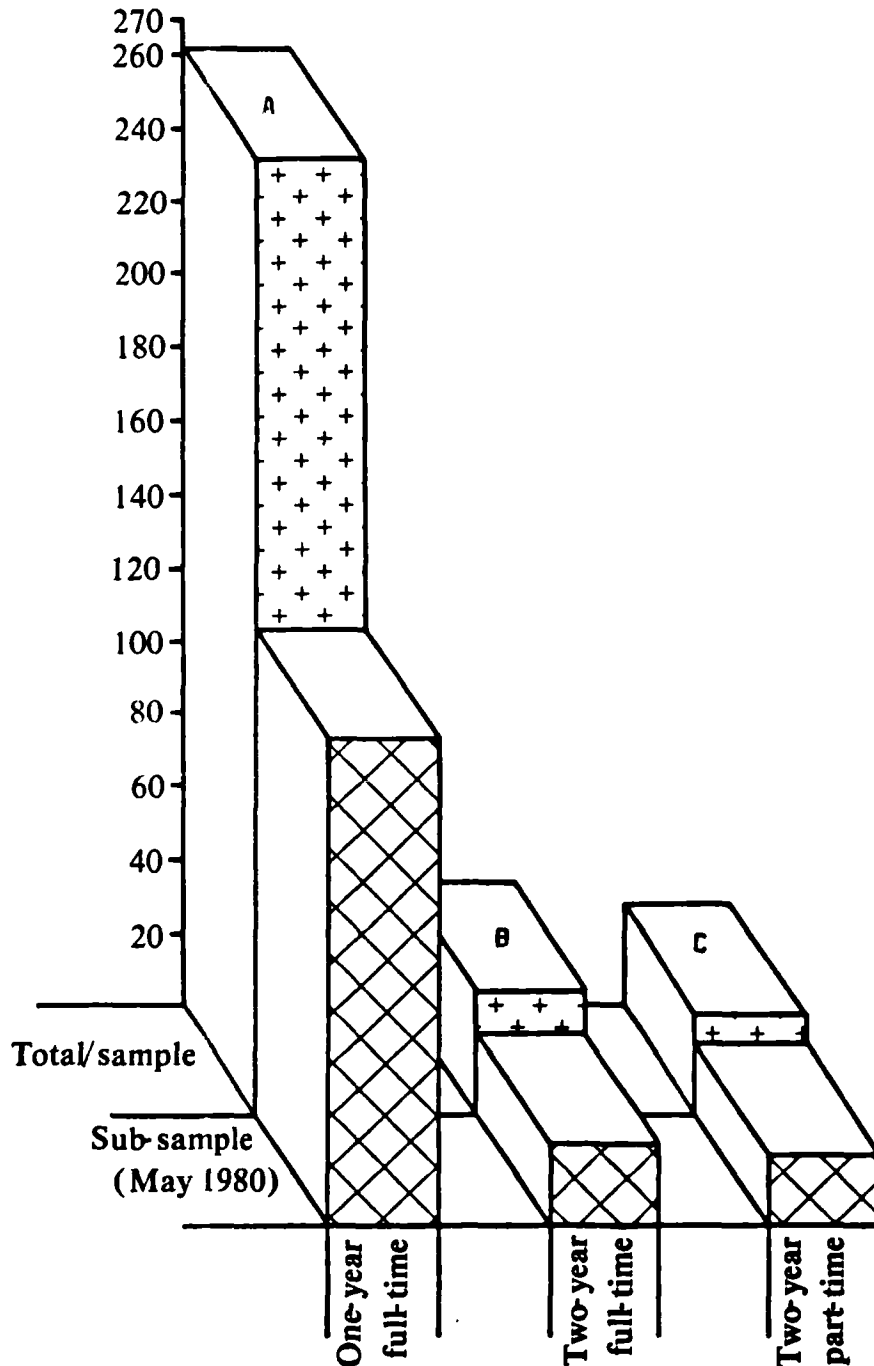
9.41 The sample

Because numbers are relatively small, the sample population included all nurse tutor students in England and Wales at the time of the study. The first sub-sample (n=176) consisted of students completing their courses in the summer of 1980 while

the second sub-sample (n=148) consisted of those commencing their training in the autumn of 1980. In all, 378 questionnaires were sent to course directors for distribution to their students. Of these, 324 were returned completed as shown in Figure 9:1.

In this chapter, whenever appropriate, one-year full-time course students will be termed Group A, two-year full-time students will be termed Group B and two-year part-time students will be termed Group C respectively.

Figure 9 : 1
Students who completed questionnaires by the type of course attended (n = 324) Q.1 on questionnaire



9.42 Returns

As shown in Figure 9:1 a total of 324 questionnaires were returned completed. This represented a 85.7% response rate for both sub-samples. A number of respondents who did not complete the questionnaire sent letters to explain their reasons. In the one-year full-time courses, students were drawn from different professional groups within the health service and included members of the professions supplementary to medicine. Thus there were physiotherapists and occupational therapists who had been included in the original lists from course directors.

The initial response rate was considerably improved by follow-up letters and reminders sent to course directors and later directly to students who were identified as non-respondents. It should be noted, however, that since anonymity had been encouraged, only those students who could be identified from the lists as non-respondents were followed up. This was possible because most respondents gave names and addresses at the end of the questionnaire and it was therefore relatively simple to eliminate those who had returned completed questionnaires and thus send reminders to those who had not done so.

9.5 Data analysis

As described in Chapter VII, quantitative and qualitative data were recorded from the completed questionnaires. The former represented pre-coded, Likert-type responses. A coding

legend with pre-coded items was prepared and each questionnaire was numbered and coded. The pre-coded data were first punched on to cards and later transferred on to magnetic tape. Descriptive statistics were then calculated for each coded question using the Statistical Package for the Social Sciences (SPSS, Nie et al 1975). One- and two-sample chi-squares were calculated as appropriate since the data base is nominal and suitable for non-parametric inferential analysis. Two-way contingency tables were constructed and the variables classified into mutually exclusive categories which were calculated as frequencies. The relationship between variables and the type of course attended by respondents were tested using the chi-square for non-independent sub-samples. This enabled inferences to be made on the statistical significance of any differences in the observed frequencies. Qualitative data from comments by course students were largely amplifications of coded responses and were treated as such. No further qualitative analysis was carried out but examples of amplification of coded responses were noted.

9.6 Findings and Discussion

Results are presented as figures and tables showing frequencies of coded responses for the pre- and post-teaching practice experience of respondents. Whenever appropriate, the two sub-samples have been separated and treated as non-comparable groups.

9.61 Personal characteristics

Figure 9: 2
Type of course attended by nurse tutor students in England and Wales
 (n = 324) Q.1 on questionnaire

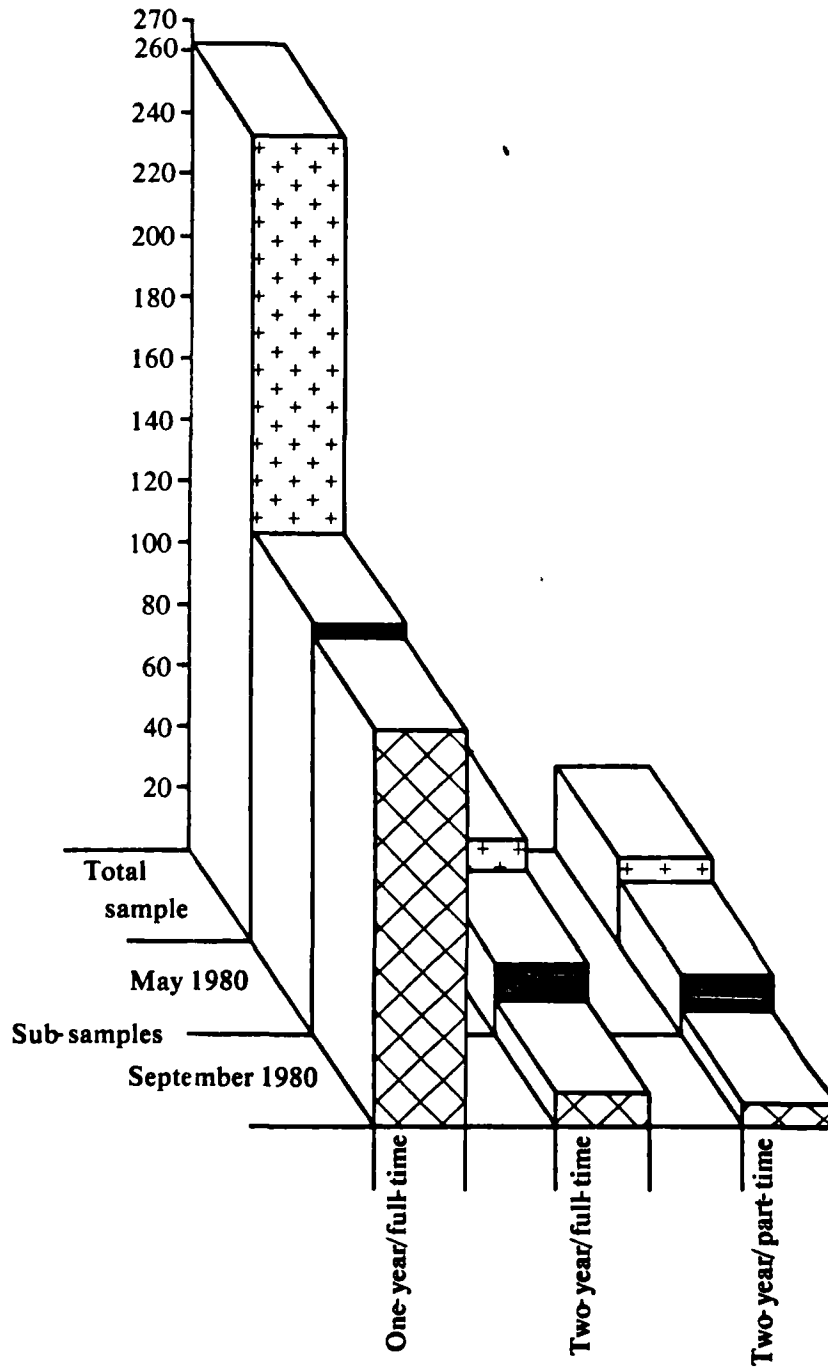


Figure 9:2 shows the breakdown of the type of course attended by respondents. The increasing number of one-year full-time courses is confirmed. Students on two-year full-time course in this study were the last to be accepted for the University of London Sister Tutor Diploma (STD). The two-year part-time courses are in-service programmes established as part of one-year full-time courses and run by the same course directors for those students who prefer this form of longer preparation. Although one-year courses remain the most attractive to prospective students because they offer a shorter period of preparation, they appear to suffer from the disadvantage that students are required to leave home for the academic year whereas the part-time course overcomes this because it is local and has the added advantage of continuity of service during the course. At a time of severe economic constraint in the training of nurse teachers, the latter type of course would seem to be the ideal method of preparing teachers.

Figure 9: 3
Sex of respondents (n = 324) Q.24
on questionnaire

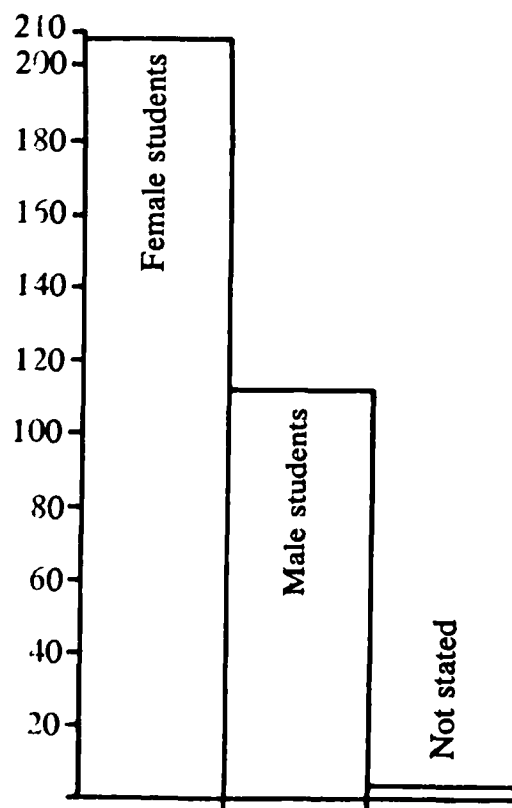
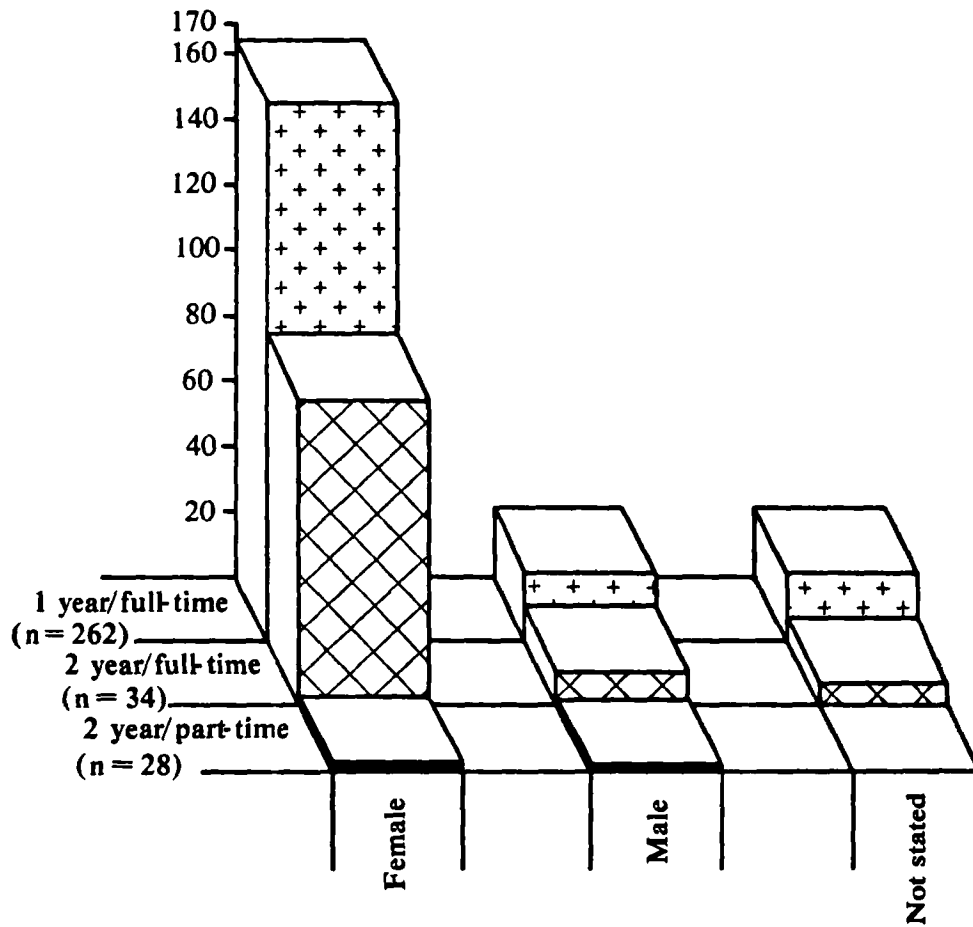


Figure 9 : 4
Sex of respondents according to the type of course attended (n = 324)
Qs. 1 and 24 on questionnaire



The findings in Figures 9:3 and 9:4 appear to support others in recent years. The survey of nurse teachers in England and Wales (GNC 1975) reported 74% females in the population of qualified nurse teachers surveyed (n=2874). This sample included clinical teachers. In the study by Lancaster (1972), 67.5% of the Scottish sample of qualified nurse tutors surveyed were females (n=239). This sample included midwife teachers and health visitor tutors. It may be that one reason for this is the slow recruitment of men into nursing in the last few years. The continuing shortage of nurse tutors (GNC, Annual Report, 1981) is a source of official and professional concern and the declining recruitment of male tutor students might be a contributory factor worth examining. It was noted (page 79) that the lack of financial rewards might be partly responsible for the decline in recruitment into nursing generally but other factors have been highlighted in the literature. Brown and Stone (1973) in a study of men in nursing, suggested that male recruits would need to be positively encouraged in order to arrest the envisaged decline in their numbers. The above findings provide support for a long observed trend which does not appear to be altered by any official response to the shortage of nurse tutors in recent years. The evidence suggests that tighter financial control is likely to lead to further decline in numbers and the ENB (1984) has taken a further step in this direction by the reduction in the number of places for tutor students.

Table 9:1

Age of respondents on Entry to Courses (n=324) Q.25

Age range (years) Group A (n=262) Group B (n=34) Group C (n=28)						

	n	%	n	%	n	%

25-29	58	22.1	4	11.8	3	10.7
30-34	91	34.7	16	47.1	4	14.3
35-39	55	21.0	6	17.6	6	21.4
40-44	37	14.1	3	8.8	8	28.6
45-49	15	5.7	4	11.8	4	14.3
50+	5	1.9	-	-	3	10.7

Compared with students on two-year part-time courses, those on one- and two-year full-time courses appear younger as shown in Table 9:1. There appears to be an increasing tendency for applicants to these courses to be younger and this could be a reflection of the long-term view of secondment taken by the DNEs. On the other hand, the reduction in the GNC's requirement for post-registration experience (discussed in Chapter IV), could be an important factor in the encouragement given to the younger prospective nurse tutor. It is worth noting, too, that the higher proportion of the older age group on part-time courses might be a reflection of their preference for locally organised courses on a day-release basis as favoured by the Briggs Committee (1972).

Table 9:2

Educational qualifications of nurse tutor students: 'A' level
attainments (n=324) Q.21b

Subjects passed*	Group A (n=262)		Group B (n=34)		Group C (n=28)	
	n	%	n	%	n	%
Biology	168	64.1	25	73.5	15	53.6
Chemistry	59	22.5	7	20.6	3	10.7
Physics	44	16.9	5	14.7	3	10.7
Sociology	43	16.4	2	5.9	6	21.4
Psychology	21	8.0	-	-	3	10.7
Mathematics	97	37.0	18	53.0	7	

*Combinations of these qualifications are held by students
i.e. one student may hold one or more of these qualifications

Table 9:3

Educational Qualifications of nurse tutor students: 'A' level
(n=324) Q.21b

Subjects passed*	Group A (n=262)		Group B (n=34)		Group C (n=28)	
	n	%	n	%	n	%
Biology	41	15.7	3	8.8	2	7.1
Sociology	10	3.8	-	-	-	-
Chemistry	12	4.6	4	11.8	2	5.9
Physics	9	3.4	2	5.9	1	3.6
Psychology	7	2.7	1	2.9	1	3.6

* As above - combinations of subjects may be held by respondents

From Tables 9:2 and 9:3, comparisons can be made between the students. Thus comparison of the 'A' level attainments between students on one-year and two-year full-time courses does not show any differences. However, it is interesting to compare the 'O' level attainments of nurse tutor students in this sample with those of learners recruited in that period as shown in Table 8:8 above. It will be seen that the learners achieved marginally better results in their examinations compared with nurse tutor students. As between the nurse tutor students themselves, Table 9:6 shows that the 'O' level attainments of students on two year full-time

courses in biology were better than those of students on the one-year full-time or two-year part-time courses. This finding suggests two possible areas of interest. Firstly, a higher proportion of students in each group had 'O' level passes in biology and might be expected to be better able to cope with the initial demands of a study of the life sciences. Secondly, the behavioural and social sciences features less prominently in the educational backgrounds of nurse tutor students than might have been expected given the upsurge of interest in these subjects in recent years.

The evidence suggests that at 'O' level, learners' backgrounds are as good as that of their prospective teachers. Comparisons of attainments of learners and nurse tutor students at 'A' level is particularly striking. At this level, the proportions are considerably lower for the nurse tutor group. This reflects the general educational attainments of learners who had entered nursing in recent years. In a sample of learners (n=15,346) who had commenced training, the GNC (1981) reported that 15.6% had 'A' level passes in biology. The proportions for other subjects are: mathematics (8.9%), sociology (7.8%), chemistry (6.7%) and physics (3.7%). These figures compare favourably with those of tutor students as shown in Table 9:3.

The implication of this finding appears to be that learners coming into nursing today have demonstrably good educational backgrounds in the sciences which are equal to, if not sometimes better than, those of their teachers. It has been

noted that educational attainment in biology provides satisfactory evidence of previous background biological knowledge for both learners and their teachers. The situation with mathematics in the case of learners and teachers is perhaps less satisfactory in the light of recent research evidence (Pirie 1980). This is particularly important for the learning and teaching of pharmacology in which mastery of mathematical manipulations is an essential aspect of drug administration.

Table 9:4
Professional Qualifications of Nurse Tutor Students (n=324)
Q.19

Respondents	Group A (n=262)		Group B (n=34)		Group C (n=28)	
	n	%	n	%	n	%
Qualifications*						
SRN**	252	96.2	33	97.1	24	85.7
RCNT	133	50.8	12	35.3	20	71.4
SCM	55	21.0	9	26.5	4	14.3
RMN	29	11.1	10	29.4	10	35.7
RSCN	20	7.6	2	5.9	-	-
RNMS	10	3.8	1	2.9	1	3.6

*Combinations of these titles are held by the students.

** See list of abbreviations (Appendix 16)

Not unexpectedly, a high proportion of students in the one-year full-time and two-year part-time groups previously qualified as registered clinical nurse teachers (RCNT). Comparisons between these two groups shows that more students on part-time courses had so qualified compared with those on one-year full-time courses. The proportions for all three groups should be compared with that quoted in the GNC Teachers of Nurses Survey (1975). This reported that 37% of respondents in that study (n=2,874) were RCNTs. The Council, in its comments on the report, deplored what it called the "tendency of clinical teachers to go on to train as tutors." It argues that:

It may be that the ideal way to learn to teach nursing is first to teach in the clinical situation and later to go on to be a tutor. However, the situation as it stands causes certain problems (p 15).

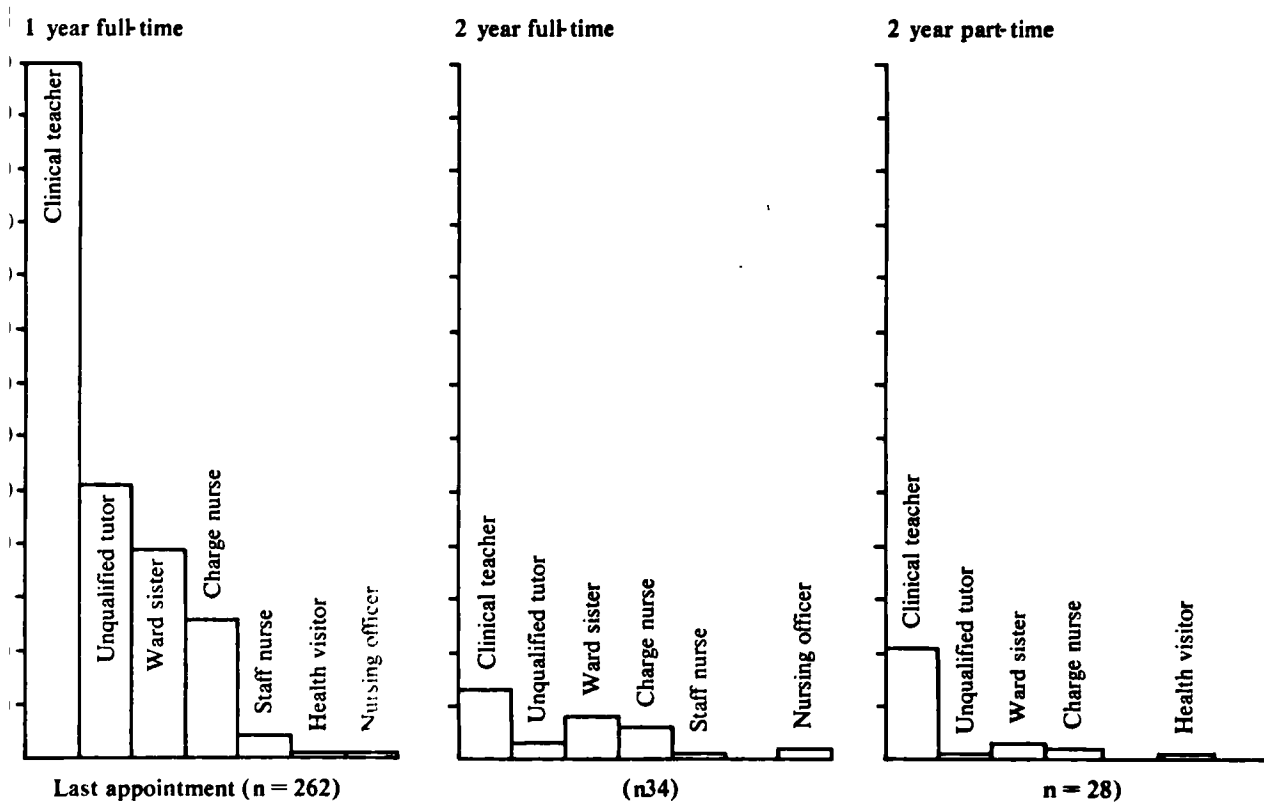
Among these problems, the Council noted that the system was expensive as it cost (then) £5,700.00 per head to train a tutor for two years while a nurse undertaking both clinical

teaching and nurse tutor courses would cost the Council £6,400.00 in the year of the survey (1975). Both costs have risen substantially and the Council's conclusions then are equally valid today:

This process must be wasteful of time and effort. The two types of course are not planned as a progression and there is likely to be duplication. Thus the process distorts manpower picture. At least one-third of those taking tutor courses come from within the school of nursing and so are not 'new' recruits. The figure of newly registered tutors become an inadequate pointer of growth. (p 25).

These comments are important in view of the outcry against the diminishing number of tutors and the effect of this on nurse education. In its Annual Report (GNC 1979/80), the Council quoted a figure of 220 nurse tutors registered through approved courses (p 38). In the same period, the number of clinical teachers registered with the Council was 251. Some of these qualified clinical teachers will have continued their careers by undertaking nurse tutor courses. In terms of cost, therefore, it can be argued that this cannot be justified at a time of economic stringency. The distortion in the number of qualified teaching staff becomes more disturbing when last appointments of respondents are considered as shown in Figure 9:5

Figure 9 : 5
Last Appointments of Nurse Tutor Students Before Commencing the Course n = 324
Q. 2



The breakdown of last appointments in Figure 9:5 shows that a large proportion of students on one-year full-time and two-year part-time courses were recruited from existing teaching staffs in schools of nursing. The distortion of manpower highlighted by the GNC (1975) survey is supported by this finding as well as the lengthening of the path to becoming a nurse tutor. For instance, the requirement that applicants should have at least a pass in Part A of the old University of London Diploma in Nursing for admission to nurse tutor courses also lengthens the period between qualifying as a nurse and becoming a registered tutor. However, this can be justified on the grounds that it enabled recruits to have a knowledge base in the life sciences as covered by Part A of the Diploma in Nursing. It was therefore a matter of interest to find out the proportion of students surveyed who had gained this qualification. Table 9:5 presents the result:

Table 9:5

Nurse Tutor Students Holding the Diploma in Nursing (n=324)

Qs.22 and 23

Respondents	Group A (n=262)		Group B (n=34)		Group C (n=28)	
	n	%	n	%	n	%
Diploma in Nursing						
Part Passed						
Parts A and B	142	54.2	10	29.4	9	32.1
Part A Only	73	27.9	5	14.7	13	46.4
Neither Parts	47	17.9	19	55.9	6	21.4

*(chi-square = 12.74 df = 2, p < 0.05)

Four-fifths of one-year full-time students (the majority possess, on entry, what appears to be accepted as a satisfactory level of preparation in the life sciences, particularly in physiology (i.e. at least Part A though more than half have Parts A and B). Nevertheless, this still means that one in five of this group is accepted without any advanced training in the life sciences. Of the students embarking on two-year full-time courses, however, more than half (55.9%) are in this situation. The position with two-year part-time courses is rather better, but again, one in five has no advanced qualification including the life sciences.

9.62 Students' perceptions

Since these qualifications represent something of a yardstick for admission (78% of all students possess at least Part A), it is interesting to note that the GNC Survey (1975) reported that 58% of nurse tutors in the sample who had attended one-year courses, and 52% of those who had attended two-year courses felt adequately prepared overall by their post-basic training. This study therefore examined the extent to which respondents considered their background knowledge of the life sciences adequate on entry to their courses. The result is presented in Table 9:6.

Table 9:6

Nurse Tutor Students' Indication of Whether or Not They
 felt Their Background Knowledge of the Life Sciences on
 Entry to the Course was Adequate (n=324) Q.7a

Students' views	Group A (n=262)		Group B (n=34)		Group C (n=28)	
	n	%	n	%	n	%
Background knowledge of the life sciences was adequate on entry	150	57.3	12	35.3	19	67.9
Background knowledge of the life sciences was inadequate on entry	98	37.4	21	61.7	7	25.0
Not stated	14	5.3	1	3.0	2	7.1

Chi-square = 26.98, df = 2, p < 0.01 (n=324)

Comparisons of the responses in Table 9:6 show that a high proportion of those on two-year full-time courses considered their background knowledge of the life sciences inadequate on entry to their courses. It will be recalled that 55.9% of this group had passed neither Part A or Part B of the Diploma in Nursing (Table 9.10). Again, although more than 80% of one-year full-time students have at least Part A, only 57.3% of this group of students considered their background knowledge adequate on entry and, given the view that one-year courses should concentrate on methods of teaching only, it will be difficult to explain how institutions in this category compensate for the perceived inadequate knowledge by the students in the absence of a formal input of these subjects.

As with nursing in general, the preparation of nurse tutors has depended on a mix of disciplines (Sheahan 1981). The contributions of these disciplines are evident in the

syllabus for basic nursing education (GNC 1977) but it was considered to be of interest to examine the views of nurse tutor students on the importance of these subjects. Respondents were therefore asked to allocate weighting to subjects in their courses from 0 - 100% in the four main areas according to their perceived usefulness in the preparation for nurse teachers (Q.7d). These areas were categorised broadly into behavioural sciences (psychology and sociology), biological/life sciences (anatomy, physiology, microbiology and pharmacology), educational studies (pedagogy, philosophy and history of education) and professional courses (nursing). The mid-point for the weighting of these courses was fixed at 30 - 40% as representing an expected level of importance to be attached, on average, to the study of these courses for the purposes of analysis. It was hoped that respondents would provide a broad measure of the perceived contribution of these disciplines to the courses of preparation as teachers. The results, in ranking order, are presented in Table 9:7.

Table 9:7
Contributory Subjects on Nurse Tutor Courses: The Ranking of
Four Disciplines by Respondents (n=324) Q.7d

Responses*	Group A (n=262)		Group B (n=34)		Group C (n=28)	
	n	%	n	%	n	%
Behavioural Sciences	159	60.6	16	47.0	19	90.0
Educational Studies	136	52.0	18	90.0	12	42.8
Biological/Life Sciences	130	49.6	22	64.7	15	53.3
Professional Studies	90	34.3	2	5.8	7	25.0

*A combination of responses may chosen in each case

The importance of these subjects in terms of hierarchies was examined as perceived by (i) males and females separately and (ii) students who came from ward sister/charge nurse

backgrounds and those who were formerly clinical teachers.

Table 9:8 presents the results.

Table 9:8

The hierarchy of importance attached to subjects in nurse tutor courses as weighted by nurse tutor students (n=324)

Q.7d

Respondents' weightings*	10 - 20%		30 - 40%		40 - 50%		50 - 70+%	
	n	%	n	%	n	%	n	%
Behavioural Sciences	154	47.5	90	27.8	40	12.3	27	8.3
Biological/Life Sciences	171	52.8	76	23.5	23	7.1	24	7.4
Educational Studies	128	39.5	78	24.1	44	13.6	64	19.7
Professional Studies	252	77.8	17	5.2	8	2.5	10	3.1

*Weightings below 30% is considered to indicate that respondents attach least importance to the area of study concerned

The results in Table 9:8 produced no significant differences

between the different type of courses. In terms of usefulness

of specific subject areas during the courses, the ranking by

respondents are shown in Table 9:9.

Table 9:9

The ranking of Courses Perceived as Being Useful by Respondents in Nurse Tutor Courses (n=324) Q.7d

Courses Weighted	Weightings 10 - 40% Useful			Weightings 40 - 70% Useful		
	n	%	R*	n	%	R*
Behavioural Sciences	244	75.3(3)		67	20.6 (2)	
Biological/Life Sciences	247	76.3(2)		47	14.3 (3)	
Educational/Pedagogical	206	63.6(4)		108	33.3 (1)	
Professional	269	83.0(1)		18	5.6 (4)	

*Ranking order in parentheses

It can be seen from Table 9:9 that professional courses were perceived as the least useful by respondents. What constitutes specific professional courses was not explicitly

defined but subjects such as history of nursing and nursing ethics are generally considered under this heading. This finding shows that the life sciences are ranked third behind education and behavioural sciences. This is perhaps understandable in view of the formal exclusion of these subjects from the majority of the courses preparing nurse tutors.

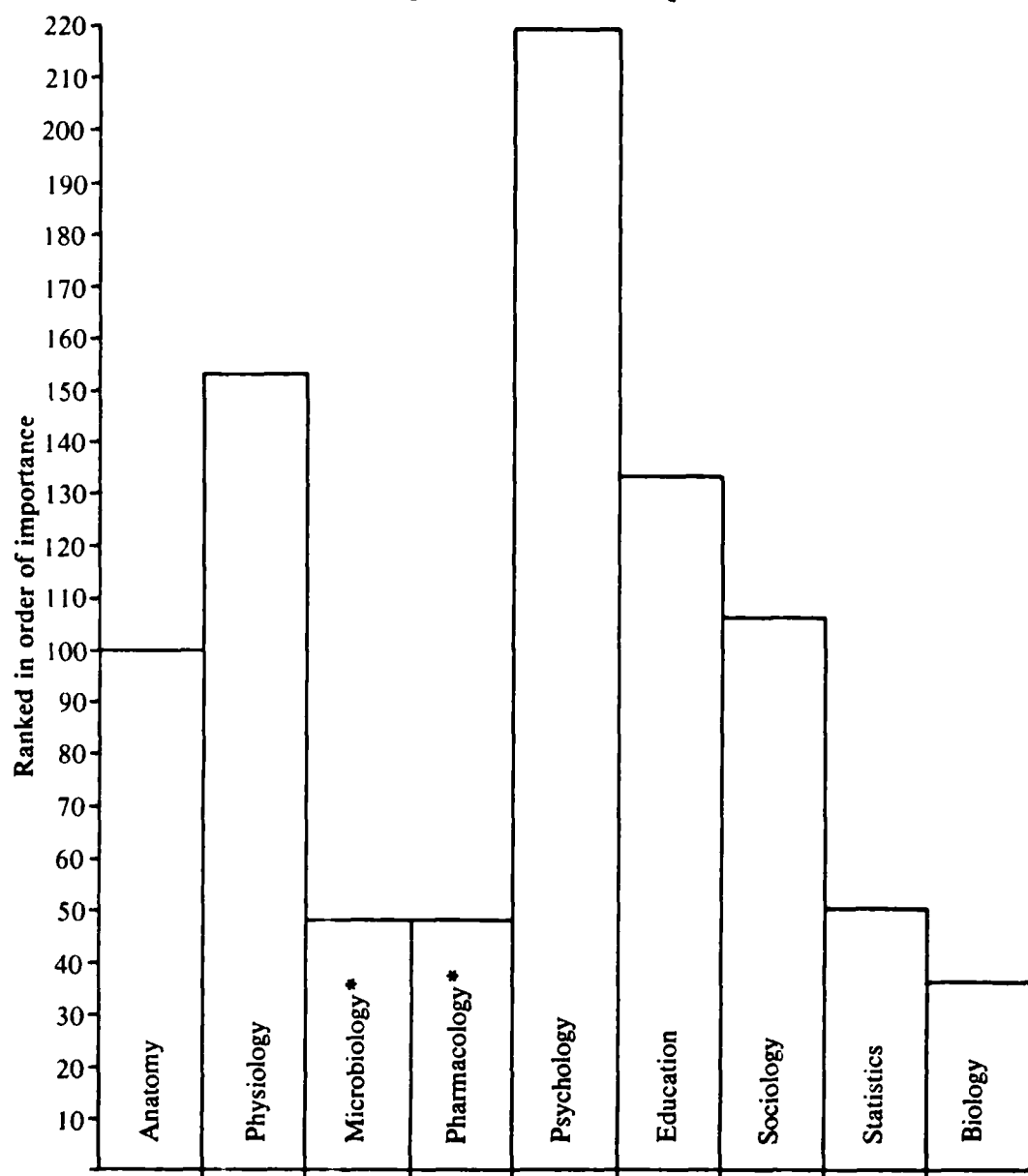
There were no significant differences between females and males as regards the importance of educational courses. However, men apparently regarded behavioural sciences to be significantly more important than do women (Table 9:7) ($t=2.82$ $df=171$ $p < 0.004$). This is a surprising finding. It appears to contradict the suggestion that the technical aspects of nursing (which depend largely on the application of the life sciences e.g. catheterisation) appeal more to the male temperament (Brown and Stone 1973; Adeloje 1976). On the other hand, there is a significant difference between females and males as regards the nature of their last appointment (Figure 9:5). More men came from posts of charge nurses than women, and more women came from clinical teaching backgrounds than men ($\chi^2 = 6.63$ $df=2$ $p<0.036$).

The above results also raise important questions in relation to the current trends in nurse tutor clinical involvement on the wards. It has been argued (Briggs 1972) that clinical teaching by nurse tutors would both enhance their professional image with learners and other staff as well as improve their practical competence. Yet the professional

contribution seems to have very little influence on what they perceive as a desirable knowledge input during their courses. Paradoxically, separating Groups A and C (Q.7d) showed that Groups A and C ranked educational courses as being less useful than Group B even though the former were on courses in which behavioural and educational courses demonstrably dominate the curriculum. The lack of a significant difference between ward sisters/charge nurses and clinical teachers noted above is surprising and perhaps calls into question the whole basis on which distinction is made between the two groups.

Respondents were also asked to identify at least five out of a list of fourteen subjects which they considered important in their preparation as nurse tutors (see Questionnaire in Appendix 4). The subjects listed in alphabetical order were anatomy, anthropology, biology, chemistry, education, history of nursing, microbiology, pharmacology, physics, physiology, psychology, statistics, sociology and zoology. These are subjects that have been associated with nursing education (Gotwald 1972) but clearly the concern of this research is with the life sciences per se. Although respondents rated most of the fourteen subjects, for the purposes of the study, ratings related to education, the behavioural and the life sciences are being considered and are presented in Figure 9:6 because remaining subjects were cited by very few respondents.

Figure 9 : 6
Nurse Tutor Students' Choice of Subjects in order of Importance for their Own Preparation (n = 324) Q. 7b.



* Life sciences not ranked among the five most important subjects.
(Combinations of these subjects have been chosen by students as important)

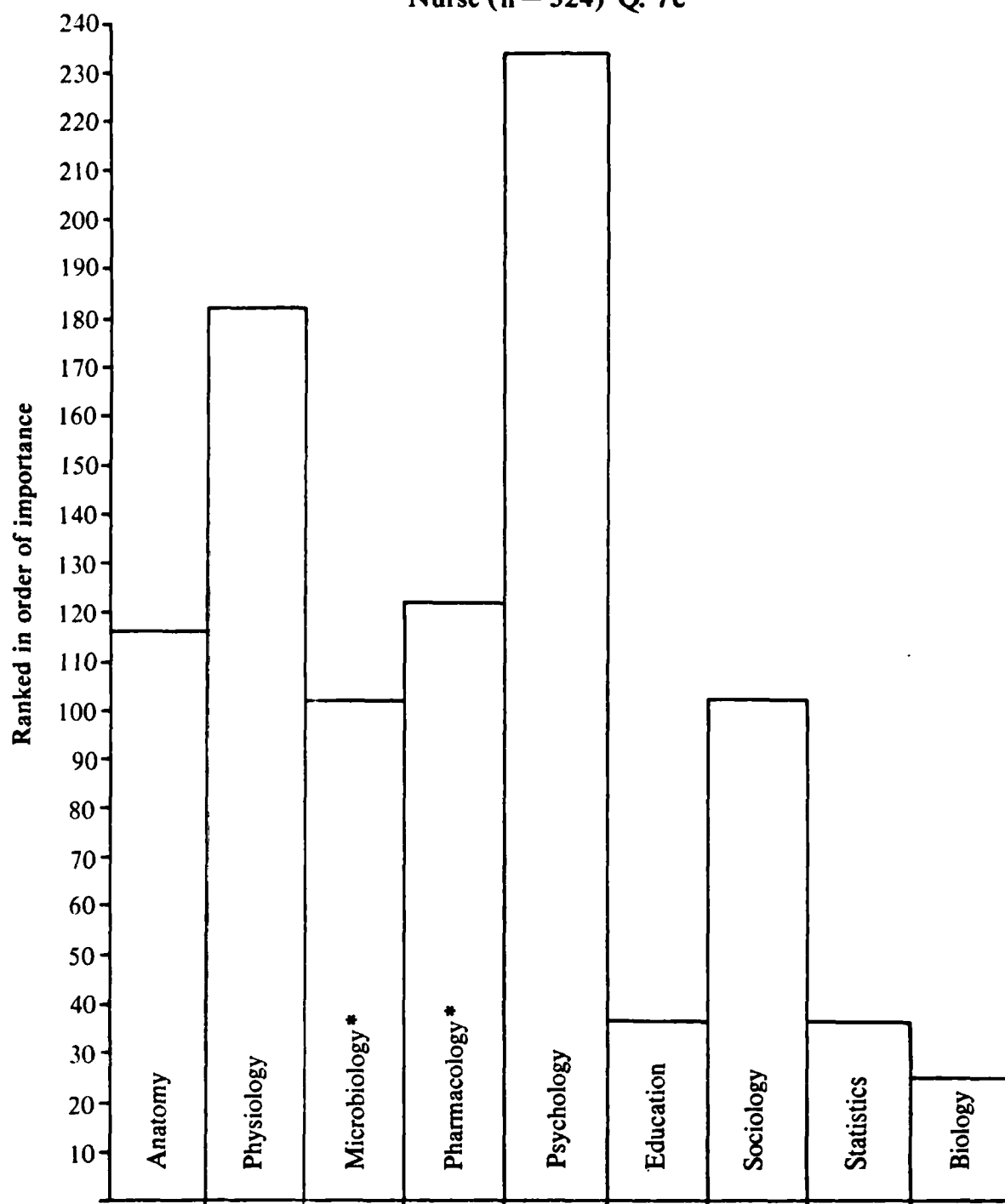
*Life sciences not ranked amongst the five most important subjects . (Combinations of these subjects have been chosen by students as important.)

The results in Figure 9:6 is striking. Of the four life sciences subjects with which this study is concerned, only physiology and anatomy were ranked amongst the the five subjects considered most important in the preparation of nurse tutors. Microbiology and Pharmacology were rated joint 7th behind education, sociology and statistics.

The ranking of physiology as the second most important subject is important, however, since this subject is not now formally taught on all nurse tutor courses. The importance attached to psychology though understandable in the context of a course with a substantial educational psychology input, is nevertheless surprising when considered as preparation for subjects to be taught when the students are qualified.

Respondents were also asked to identify at least five subjects (from the same list) important for the trained nurse with clinical responsibilities and to list them in order of priority. The results are presented in Figure 9:7.

Figure 9 : 7
Nurse Tutor Students' Choice of Subjects in Order of Importance for the Trained Nurse (n = 324) Q. 7c



*(Combinations of these subjects have been chosen by the students, i.e., one respondent may have chosen more than one of these subjects as important.)

When the responses in Figures 9:6 and 9:7 are compared, an important difference can be seen between those subjects they rated as important in their own courses, and those they rated important to the trained nurse. It should be noted that neither pharmacology nor microbiology was rated amongst the five most important subjects for the nurse tutor students and yet both are considered important subjects for the trained nurse.

The question to be addressed, therefore, is an important one. For since nurse tutors are responsible for the education of learners (the future trained nurses), who will provide tuition in these subjects for learners if they have not themselves been prepared to teach them during their own courses? This is clearly a matter of curricular and professional concern if those prepared specifically for the purpose of teaching learners consider particular subjects of low priority in their own courses and yet rated the same subjects as important for the trained nurse.

Moreover, the ranking of psychology as the most important subject for both groups (nurse tutor students and trained nurses) must be viewed with concern. There is now substantial evidence to suggest that the behavioural sciences are important to all nurses (Crow 1976; Clarke 1981; Wattlely & Muller 1983). However, it may be argued that the study of educational psychology on nurse tutor

courses provides a limited, specialised background and does not prepare the nurse tutor students for the responsibility of teaching psychology after qualifying (Sheahan 1981).

These findings are important when considered in the light of respondents' view of their preparation in the life sciences before undertaking their courses. Respondents were asked whether they considered their background knowledge of the life sciences adequate for (a) the course being undertaken and (b) for teaching purposes. The results are presented in Table 9:10.

Table 9:10
Nurse Tutor Students' Indication of Whether or Not They Felt
That Their Background Knowledge of The Life Sciences Was
Adequate for The Course and for Teaching Purposes (n=324)
Q.7a

-----	-----
All respondents (Groups A,B&C)	n
-----	-----
Life sciences background adequate for coping with the course	118
Life sciences background adequate for coping with the range of teaching normally required of a registered nurse tutor	48
-----	-----

From Table 9:10 it can be seen that less than half of the students considered their background knowledge of the life sciences adequate for coping with the course itself. And this in spite of the possession of the Diploma in Nursing (Parts A and B) as shown in Table 9:10 above. It is important to note that only 14.8% considered their life sciences background

adequate for coping with the range of teaching normally required of the registered nurse tutor.

Yet, as we have seen throughout this thesis, these are subjects that are excluded from the majority of courses preparing nurse tutors and which they themselves do not perceive as important in their preparation for the range of teaching that will be required of them when they are qualified (Table 9:14) and yet expect their learners to be proficient in (Table 9:15). This evidence suggests the need for a serious re-think of the whole basis of nurse tutor preparation and their ability to carry out their teaching responsibilities as qualified teachers.

9.63 Teaching demands made on students

One-year courses have established a pattern of preparing tutors for more than a decade now, and the subjects taught on these courses are considered the priorities for the students' future teaching responsibilities. This is particularly important because of the evidence from the preliminary study (Chapter VI) which suggests that learners experience difficulties in the study of the life sciences.

For this reason, it was considered appropriate to obtain the views of students in the 1979/80 sub-sample who had already undertaken teaching practice. The objective of this item was to obtain information on the life sciences regularly taught by the students when on teaching practice - Table 9:11:

Table 9:11

Nurse Tutor Students' Indication of Main Subjects Taught
During Teaching Practice (n=176) Q.13

Subject taught regularly*	Group A (n=133)		Group B (n=23)		Group C (n=20)	
	n	%	n	%	n	%
Anatomy and Physiology	99	74.4	16	69.6	12	60.0
Microbiology	11	8.3	2	8.7	4	20.0
Pharmacology	9	6.8	-	-	6	30.0
Immunology+	22	16.5	1	4.3	4	20.0

A combination of these subjects are taught i.e. one respondent may have taught more than one of these subjects.

Anatomy-physiology is the basis of teaching medical/surgical nursing.

Table 9:11 is instructive for two reasons. Firstly, it demonstrates the central position of anatomy and physiology as the core life science subjects which tutor students were largely required to teach on teaching practice. Secondly, the apparent lack of regularity in the teaching of microbiology could be a reflection of the relatively low priority given to the subject in the schools even though it is a subject that is particularly central to nursing activities in clinical practice. Although pharmacology appears to feature irregularly in the teaching practice experiences of nurse tutor students, its application and importance in nursing are underlined by respondents' views on the need for a knowledge of the subject as shown in Table

:

Table 9:12

Nurse Tutor Students' Indication of the Importance of
the Study of Pharmacology in Relation to the Care of Body
Systems in Nurse Training (n=324) Q.18c

System	Group A (n=262)		Group B (n=34)		Group C (n=28)	
	n	%	n	%	n	%
Cardiac	242	92.4	30	88.2	26	92.9
Respiratory	231	88.2	28	82.4	25	89.3
Neurological	228	87.0	27	79.4	25	89.3
Endocrine	200	76.3	23	67.6	23	82.1
Mouth	59	22.5	15	44.1	10	35.7
Other	24	9.2	30	88.2	25	89.3

It can be seen in Table 9:12 that the ranking of the three groups indicate an agreement on the importance of pharmacology in the planning of nursing care. The patho-physiology referred to above features prominently in the teaching of these aspects of nursing. Taken together with the results in Table 9:7, it may be pertinent to ask whether students on one-year courses (the majority) with acknowledged inadequate knowledge of the life sciences will be in a position to remedy any deficiencies during their preparation in the absence of formal input of these subjects.

It was noted above that nurse tutor students taught subjects which are dependent on a knowledge of patho-physiology covering medical specialities. Twelve of these areas of specialisation in which nurse tutors would normally be expected to teach were included in the study. It was hoped to identify specific teaching experiences (related to these specialities) of respondents in the first sub-sample (n=176) related to these specialities during various stages of

learners' training i.e. pupils and students during introductory, first, second and third years. The results are presented below. Tables 9:13 - 9:16).

Table 9:13
Nurse Tutor Students' Indication of Nursing Subjects
Taught During Teaching Practice to Learners (n=176) Q.14

Introductory Block						
specialities taught by students*	Group A (n=133)		Group B (n=23)		Group C (n=20)	
	n	%	n	%	n	%
nursing	66	49.6	11	47.8	12	60.0
1 nursing	47	35.3	8	34.8	9	45.0
atric nursing	22	16.5	1	4.3	2	10.0
ic nursing	21	15.8	1	4.3	7	35.0
ric nursing	8	6.0	2	8.7	1	5.0
edic nursing	7	5.3	3	13.0	3	15.0
ological nursing	7	5.3	-	-	4	20.0
mic nursing	6	4.5	-	-	1	5.0
ty nursing	6	4.5	-	-	-	-
se and throat nursing	3	2.3	1	4.3	2	10.0
ic nursing	1	0.8	-	-	-	-

Table 9:14

First Year Block						
nursing	77	57.9	15	65.2	13	65.0
1 nursing	56	42.1	9	39.1	12	60.0
ic nursing	25	18.8	5	21.7	11	55.0
ric nursing	23	17.3	2	8.7	2	10.0
edic nursing	20	15.0	3	13.0	4	20.0
atric nursing	18	13.5	3	13.0	7	35.0
se and Throat nursing	16	12.0	3	13.0	4	20.0
ological nursing	10	7.5	2	8.7	5	25.0
ty nursing	8	6.0	-	-	-	-
nursing	7	5.3	2	8.7	-	-
mic nursing	4	3.0	1	4.3	1	5.0
ic nursing	1	0.8	2	8.7	-	-

Table 9:15

Second Year Blocks

nursing	76	57.1	12	52.2	13	65.0
nursing	68	51.1	13	56.5	12	60.0
ic nursing	32	24.1	5	21.7	8	40.0
c nursing	26	19.5	3	13.0	10	50.0
c nursing	24	18.0	-	-	1	5.0
ic nursing	24	18.0	5	21.7	5	25.0
e and Throat nursing	24	18.0	2	8.7	4	20.0
ic nursing	15	11.3	2	8.7	5	25.0
y nursing	13	9.8	-	-	-	-
ogical nursing	10	7.5	2	8.7	4	20.0
c nursing	5	3.8	-	-	-	-
nursing	5	3.8	-	-	10	50.0

Table 9:16

Third Year Blocks

nursing	67	50.4	10	43.5	11	55.0
nursing	55	41.4	7	30.4	11	55.0
e and Throat nursing	26	19.5	2	8.7	3	15.0
ic nursing	16	12.0	2	8.7	3	15.0
ic nursing	15	11.3	4	17.4	4	20.0
c nursing	15	11.3	3	13.0	5	35.0
ic nursing	14	10.5	-	-	2	10.0
ogical nursing	13	9.8	2	8.7	-	-
y nursing	8	6.0	-	-	-	-
nursing	2	1.5	-	-	1	5.0
c nursing	1	0.8	2	8.7	3	15.0

tions of these specialities are taught by students during teaching i.e. one student may teach any of the above specialities.

9:13 - 9:16 reflect combinations of areas of specialities in which for students in the first sub-sample (n=176) taught during teaching

When the responses of students in Group C are compared in relation to the two main specialities in which all students consistently undertook teaching practice (i.e. medical and surgical nursing), with those of students in Groups A and B, there are clear differences in the results. Students in Group C appear to teach right across all specialities more than those in the other two groups. Even when individual blocks are taken separately, the teaching practice experiences of

all the groups reflect a 'generalist' approach i.e. all students are expected to teach any speciality as required by the schools irrespective of the students' specific specialisation. The Briggs Committee (1972) noted the ineffectiveness of this approach and viewed it as wasteful of resources.

It could be, then, that though students were involved in this teaching across the board during their practice experiences, they might nevertheless oppose this 'generalist' approach. An item was therefore included in the questionnaire which enabled respondents to express their views on the issue. The results are shown in Table 9:17.

Table 9:17

Students' Indication of Whether They Thought Nurse Tutors Should Be Generalists or Specialists (n=324) Q.9a Section 2

Students' Opinions	Group A(n=262)		Group B(n=34)		Group C(n=28)	
	n	%	n	%	n	%
Nurse tutors should be specialists in specific subjects	156	59.6	21	61.8	17	60.7
Nurse tutors should be generalists for all subjects	103	39.2	8	23.5	11	39.3
Nurse tutors should combine both specialist and generalist roles	10	3.8	-	-	2	7.1
Not stated	14	5.3	-	-	1	3.6

A third statement was included to encourage change of view by respondents on the first two statements. It is possible that very few could see any difference from the preceding question.

Findings in Table 9:17 show that the majority of respondents from each group favoured specialisation by nurse tutors. This

is not unexpected, however, considering the fact that a degree of specialisation already exists according to the part of the register to which a nurse belongs or the specialised clinical area in which a nurse practises. However, specialisation, as shown in Tables 9:13-9:17 is inherent in the nature of medical specialities which are based on body systems. This broad specialisation, though important, was not the main concern of this study. It was rather that specific life science subject specialisation by nurse tutors was being considered. For instance, a medical microbiologist or pharmacologist specialises in specific subject-matter after initial medical qualification. Thus if nurse tutors were to be specialists in a similar way, it may be that this should be done during their courses of preparation. The views of students were canvassed on the question as shown in Table 9:18.

Table 9:18
Nurse Tutor Students' Indication of Whether They Agreed or Disagreed that Nurse Tutor Students Should Be Allowed to Specialise in the Life Sciences During Their Training (n=324)
Q.9b

Opinions	Group A (n=262)		Group B (n=34)		Group C (n=28)	
	n	%	n	%	n	%
Nurse tutor students should specialise in specific biological subjects during their course of preparation by nurse tutor in biological sciences necessary during their life science subject specialisation	151	57.6	18	52.9	12	42.9
of study	91	34.7	14	41.2	13	46.4
ed	20	7.6	2	5.9	3	10.7

Comparisons of the views of respondents in Groups A, B and C show no significant differences. It appears that students generally favour specialisation in these subjects during

their courses though the proportions are rather too low to be regarded as strongly supportive of the idea. It may be that the absence of formal input of the life sciences in the courses for Groups A and C and the ending of the course of preparation for Group B makes this a difficult matter for respondents to be decisive. It could also reflect feelings of insecurity caused by subjects they are called upon to teach.

These results, taken together, suggest that Lancaster's (1972) finding which showed that 74.8% of registered nurse tutors in her sample (n=123) rated the life sciences as the 'most important' subjects in the curriculum of tutors' course is, in part, supported by the present study. However, given that the sister-tutor diploma course has ceased and that one-year full-time and two-year part-time courses have no formal input of these subjects, who should provide learners with the knowledge that they require for an understanding of their application to clinical practice? In the present study, the first sub-sample who had completed teaching practice (n=176) was treated separately and gave the following figures, 64.2% preferred nurse tutors who had specialised in these subjects while 26.7% would like to see specialist graduates in the life sciences to teach them (see model of existing pattern of nurse teacher preparation - Appendix 11). The medical staff was favoured by 9.1% of the respondents and no significant differences were found between the three groups. Hayward (1982) in the RCN Nursing Lecture suggests that graduates in the biological, behavioural and other relevant disciplines could be recruited to provide

appropriate input in these subjects as a way of releasing nurse tutors to concentrate on teaching nursing and also to overcome some of the problems posed by the acute shortage of nurse tutors. He notes the benefits to learners from such an arrangement because:

they rarely, if ever, have the benefit of being taught by professionally qualified biologists; also their social and behavioural science studies are minimal in such important areas as social and interpersonal skills, a subject requiring extremely skilful teaching. (p 376).

More importantly in terms of teaching nursing, Hayward argues that nurse tutors, relieved of the responsibility for teaching these other specialist subjects, would be able to devote more time to the teaching of nursing. In the case of the life sciences, it could be argued that much would be gained by such an arrangement in that nursing could be taught from a 'bionursing' perspective by nurse tutors with a distinctive approach from that of the current predominantly biomedical curriculum in schools of nursing. Indeed, the theoretical framework proposed in (Chapter V) rests fundamentally upon such an approach as the cornerstone to the teaching and learning of the life sciences in nursing education. This approach would also remove nurse tutor preparation from the traditional model as summarised by Thouless (Appendix 11a).

For Thouless's model of teacher education acknowledges the need for a degree in the relevant subject plus the diploma in education in order to become a qualified teacher. Thus education only would be taught to the student without any subject-matter input. Indeed, the possession of the bachelor of education, diploma in education or master in education degrees would be facilitatory to the process of becoming a competent qualified teacher. On the other hand, Hayward (1982) proposes three distinct routes to becoming a qualified nurse tutor. The routes may be summarised as follows (see Appendix 11b):

Route 1

Basic nursing registration plus a disciplinary degree (e.g. in the biological or social sciences) followed by a special shortened nurse tutor course.

Route 2

A first degree (any discipline) plus a shortened professional course for basic registration followed by Thouless's model approach i.e. diploma in education and registration as a nurse teacher.

Route 3

This is designed for existing staff already involved in teaching learners. Four groups are recognised and their paths to becoming nurse tutors are charted as follows:

Group I - RCNT plus six months full-time course to qualify as nurse tutors.

Group II - Possession of Diploma in Nursing (revised curriculum) plus one-year full-time course to qualify as nurse tutors.

Group III - Unqualified nurse tutors without the Diploma in Nursing. This group would undertake the new diploma and take the education option within it to qualify as nurse tutors.

Group IV - Ward sisters/charge nurses would take the the new diploma course and follow it up with the one-year full-time course to qualify as nurse tutors.

Of the two models, therefore, it would seem that Hayward's provides for different avenues for aspirants to these courses. This approach is supported by Watson (1976) who argues that a phased approach would enable a large number of recruits to enter these courses and thus lead to a reduction in the current shortage of nurse tutors.

9:64 Teaching practice supervision of students

Throughout the conduct of this study, the problem of teaching and learning has been central to every consideration in the planning and execution of the research. It was realised that nurse tutor students, no less than the learners they teach,

need help and guidance during their own preparation in order to carry out their functions effectively when qualified. It is a central tenet of this thesis that the life sciences represent important subjects in which guidance is crucial during nurse tutor training. For this reason, the supervision of students on teaching practice was regarded as an important aspect of their course and the guidance that they received on the teaching of the life sciences was viewed to be a test of the effectiveness of the 'methods only' approach to the one-year full-time and two-year part-time courses. Because these two type of course assume a background knowledge of the life sciences in their recruits, then how these subjects are taught to learners by these groups becomes a central issue for supervisors. Of the students in the first sub-sample (n=176), 86.9% were on 'methods only' course. The students were asked to provide information on this aspect of their preparation. The results are presented in Tables 9:19-9:27.

Table 9:19
Nurse Tutor Students' Indication of How Often They were Supervised During Teaching Practice (n=176) Q.11

Frequency of supervision	Group A (n=133)		Group B (n=23)		Group C (n=20)	
	n	%	n	%	n	%
Regularly	74	55.6	8	34.8	9	45.0
Rarely	44	33.1	15	65.2	8	40
No supervisions	9	6.8	-	-	1	5.0
Not Stated	6	4.5	-	-	2	10.0

The results in Table 9:19 highlight an important issue in nurse teacher preparation particularly where the 'methods only' approach is adopted as on current nurse tutor courses. Given that students have expressed perceived inadequacy in,

their background knowledge of the life sciences on entry to the course and the formal exclusion of the life sciences from the subjects they are taught, it would seem that teaching practice guidance would be one opportunity where any deficiencies in their knowledge of the life sciences could be remedied.

Of those who indicated that they received guidance (either generally or in biological/life sciences), the point at which such guidance was received and its nature could be important. In terms of the nature of such guidance, the need for advice on the choice of appropriate life sciences concepts in lesson could be helpful to the student. On the other hand, some students might require specific advice on the choice of teaching methods in order to ensure the effective transmission of knowledge of the life sciences to learners. These issues were therefore explored and the result is shown in Table 9:20.

Table 9:20
Nurse Tutor Students Who Received Guidance in Lesson
preparation a) Generally and b) In the biological Sciences
Specifically (n=176) Q.10a

of guidance received	Group A(n=133)		Group B(n=23)		Group C(n=20)	
	n	%	n	%	n	%
Generally	79	59.4	17	73.9	5	25.0
In the life sciences	40	30.1	2	8.7	6	30.0
Specifically	14	10.5	4	17.4	9	45.0

The evidence suggests that, as far as the life sciences are concerned, very little guidance was received by students either on appropriate content or on choice of teaching methods. Whether students received guidance or not, however, they are supervised by staff from colleges and within the institutions where teaching practice is undertaken. The frequency of teaching practice supervision by college staff is presented in Table 9:21.

Table 9:21
Nurse Tutor Students' Indication of the Nature and Form of
Guidance Received During Teaching Practice (n=169) Q.10b

of guidance received	Group A(n=139)		Group B(n=19)		Group C(n=11)	
	n	%	n	%	n	%
Discussion before and after						
Lessons	13	9.4	3	15.8	-	-
Discussion after the lesson	11	7.9	3	15.8	1	9.1
Advice on choice of appropriate biological concepts						
Use in the lesson	40	28.8	3	15.8	3	27.3
Advice on the choice of teaching methods	37	26.6	6	31.6	6	54.5
Stated	36	25.9	1	5.2	1	9.1

The findings in Tables 9:19-9:21 are of considerable importance particularly in relation to the general and specific supervisory role of staff concerned with these courses. Students' responses were compared for the three groups to test the significance of their perceptions of the

guidance received. The results show that Group B received more general guidance on the life sciences while specific guidance on these subjects were low-keyed for all groups. Comparisons of forms of guidance received by students (Table 9:28) show that, of those who received guidance, there were differences in the form of guidance given by supervisors. Group C reported proportionally more advice on the choice of teaching methods.

These results would seem to call into question the effectiveness of the 'methods only' approach if the assumed knowledge of students in the life sciences is not guided during their lesson preparation and reviewed after its presentation. In particular, this would suggest that for those students with professed inadequate knowledge of the life sciences, help would not normally be given on the accuracy of the contents of their prepared lesson. In the normal course of supervision of students, however, the supervisor might not necessarily be an expert in the life or other sciences. This could well reflect an area of serious concern. Hence supervision in such cases would be confined to the method of teaching rather than the contents being taught. The evidence from Table 9:22 below shows that different members of staff (nurses and non-nurses) are responsible for teaching practice supervision.

Table 9:22
Nurse Tutor Students' Indication of Who Supervised Them
During Teaching Practice (n=176) Q.11

Supervisor of teaching practice	Group A(n=133)		Group B(n=23)		Group C(n=20)	
	n	%	n	%	n	%
College Staff	93	70.0	17	74.0	10	50.0
Staff in the School	10	7.5	1	4.3	-	-
Not Stated	31	22.5	5	21.7	10	50.0

There were no statistically significant differences between the groups in relation to the teaching supervision received from college staff. It would appear from the above findings that staff in the schools of nursing were hardly involved in the supervision of students. This may be explained by the fact that the acute shortage of tutorial staff often precluded this. On the other hand, students might have interpreted supervision strictly in relation to the college-based staff and thus disregarded the normal presence of school staff as part of the formal supervision of teaching practices. Whatever interpretation might be put on the nature of, and staff responsible for, supervision, contact with learners generally and specifically in the clinical areas has been a matter of professional interest since the Briggs Report (1972) and the Royal Commission on the NHS (1979) and the results obtained here certainly justify a measure of concern about the adequacy of supervision at least in relation to content. (This is a problem which also exists in colleges of education as evidenced by the James Report, 1972).

9.65 Clinical and general contacts with learners during teaching practice

Overall, the pattern of responses to the questions on teaching practice experience suggests a classroom-based approach. For this reason, it was considered important to ascertain the specific contacts that students had with learners generally as well as in clinical areas during their periods of teaching practice in schools of nursing. The results are presented in Table 9:23.

Table 9:23
Nurse Tutor Students Who Had Contacts With Learners During Teaching Practice (n=176) Q.12.

Clinical contacts	Group A (n=133)		Group B (n=23)		Group C (n=20)	
	n	%	n	%	n	%
Those who reported clinical contacts	91	64.8	12	52.2	19	95.0

As already indicated in Table 9:9 (p 246), 75% of students in Group C were practising clinical teachers and 71.4% of this group had already qualified as registered clinical teachers (RCNTs). It is perhaps to be expected that 95% of this group had clinical contacts with learners although both Groups A and B had quite substantial contacts as well. The frequency of such contacts was therefore explored as presented in Table 9:24.

Table 9:24
Nurse Tutor Students Who Indicated How Often They Were In
Contact With Learners In The Clinical Areas (n=122) Q.12

	Group A (n=91)		Group B (n=12)		Group C (n=19)	
	n	%	n	%	n	%
Frequency						
Weekly contacts	48	52.7	5	41.7	15	79.0
By Circumstance	39	42.9	5	41.7	3	15.7
Monthly contacts	4	4.4	2	16.7	1	5.3

No significant differences were found in relation to the clinical contacts with learners. Evidence in respect of students' reported weekly contacts suggests that those in Group C were more regularly in contact with learners. Thus part-time courses, because they allow students to maintain their clinical bases while preparing to be tutors, are seen in this study to be effective in the much debated need for tutors to maintain clinical credibility by working with learners.

9.66 The life sciences and clinical performance: theory/practice link

The foundation for the qualified nurses' clinical performance is laid, however, in the mastery of the contents of the basic syllabus of training. It is in the nature of the syllabus (GNC 1977) that it approaches the learning of nursing from a broadly systemic manner. The life sciences' contributions to the syllabus are underlined by the prominence of these subjects in the syllabus. Respondents, as future teachers, were asked to rate aspects of the syllabus in terms of their importance in nurse training. The results are represented in Table 9:25.

Table 9:25

Areas of biological sciences in the Syllabus for Basic
Nursing Education Rated by Nurse Tutor Students as Important
in The Syllabus For Nurse Training (n=324) Q.18c

Drug actions(body systems):

	Very Important		Important		Least Important		Not Stated	
	n	%	n	%	n	%	n	%
Cardiovascular	189	58.3	125	38.5	-	-	10	3.1
Respiratory	181	55.9	133	41.1	-	-	10	3.1
Endocrine	160	49.4	151	46.6	2	0.6	10	3.1
Alimentary	138	42.6	175	54.0	1	0.3	10	3.1
Urinary	137	42.3	175	54.0	2	0.6	10	3.1
Eyes, ears and mouth	121	37.3	181	55.8	11	3.4	11	3.4
The skin	108	33.3	190	58.6	13	4.0	13	4.0
Female genital	98	30.2	200	61.7	12	3.7	14	4.3

Table 9:26

The importance of the life sciences in the syllabus for nurse training
perceptions of nurse tutor students (n=324) Q.18a

General aspects of the Syllabus

	Very Important		Important		Least Important		Not Stated	
	n	%	n	%	n	%	n	%
Sytematic study of the human body	181	55.9	134	41.3	1	0.3	17	5.2
Human nutrition	135	41.7	180	55.6	1	0.3	8	2.5
Sterilisation and disinfection	100	30.9	194	59.8	1	0.3	17	5.2
Chemotherapy	80	24.7	226	69.8	9	2.8	9	2.8
Classification of micro-organisms	33	10.2	239	73.8	35	10.8	17	5.2

Table 9:27

The importance of the life sciences in the syllabus for nurse training
perceptions of nurse tutor students (n=324) Q.18b

Study of body functions:

	Very Important		Important		Least Important		Not Stated	
	n	%	n	%	n	%	n	%
Respiration	215	66.4	100	30.8	2	0.6	8	2.5
Excretion	189	58.3	126	38.9	-	-	9	2.8
Locomotion	174	53.7	139	43.0	3	0.9	8	2.5
Sensitivity	162	50.0	150	46.3	3	0.9	9	2.8
Reproduction	133	41.0	170	52.5	13	4.0	8	2.5
Growth	130	40.1	178	54.9	7	2.2	9	2.8

Respondents were also asked to list, in order of importance,
at least six of the above areas in nursing with the following
results:

1. Systematic study of the human body
2. Body functions: Respiration
3. Human nutrition
4. Drug action on the cardiovascular system
5. Body functions: Excretion
6. Chemotherapy
7. Sterilisation and Disinfection
8. Body functions: Locomotion

When the results in Tables 9:25-9:27 and the list of areas in order of importance are taken together, they suggest that respondents see a need for teachers to be able to provide systematic tuition to learners in the life sciences. Indeed, the order of importance reveals a homeostatic logic in that the first five areas relate to normal applied anatomy and physiology. The sixth and seventh subjects are the

pharmacological and microbiological aspects of nurse training. This reinforces the evidence from earlier tables that respondents, despite the exclusion of the life sciences from their courses, nevertheless see these subjects as important areas of the nursing syllabus.

In the exploratory study (Chapter VI), it was noted that learners from the introductory block of six weeks spent one day a week on the wards and that they were involved in the carrying out of certain nursing activities under supervision. In the later stages when aspects of the learning and uses of the knowledge derived from the life sciences were investigated (Chapter VIII), learners' perceptions of the need for a knowledge of the life sciences were more closely examined. A list of 25 nursing activities presented to learners was reported in terms of whether they considered a high or low level knowledge of the life sciences was required for the performance of such activities. Reference was also made to Wilson's (1975) findings, which indicated that nurses' knowledge of the biological sciences was haphazard and inadequate for the level of practice they undertook and below the expectations of doctors. Attempts have not been made to provide support for this finding. This is because what learners were required to do in the present study was generally to identify what they perceived as the level of knowledge required for the application of the life sciences in the performance of specified nursing tasks. It is clearly important to appreciate that identification does not guarantee an understanding and this has not been pursued in

the present study. Nevertheless, the findings from the learners' survey provide a relevant opportunity for the views of nurse tutor students to be canvassed on two aspects:

1. The qualified nurses' requirement of a knowledge of the life sciences in order to understand the significance of specified nursing activities.
2. The levels of knowledge of the biological/life sciences required by learners in relation to the same nursing activities as those presented for the qualified nurse as above.

It was hoped to establish whether any differences exist between the perceptions of students according to the type of course attended i.e. whether respondents would see the contribution of the subjects in different lights reflecting their course orientations.

The results are shown in Table 9:28.

Table 9:28

Nurse Tutor Students' Indication of The Need for a Qualified Nurse to Have Knowledge of the Life Sciences in Relation to Specified Nursing Activities (n=324) Q.4

Nursing activities	(n=262)		(n=34)		(n=28)		p	sig
	Group A		Group B		Group C			
	n	%	n	%	n	%		
of pressure areas	248	94.7	33	97.1	26	92.9	0.86	n
of intravenous infusion	255	85.9	33	97.1	26	92.9	0.01	*
ing urine	238	90.8	28	82.4	20	71.4	0.59	n
ecting specimens	203	77.5	28	82.4	25	89.3	0.13	n
ng bedpans	133	60.8	15	44.1	8	28.6	0.36	n
ng urinals	132	60.4	32	94.1	8	28.6	0.31	n
ecting and emptying badpans	170	64.9	20	58.8	15	53.6	0.89	n
ecting and emptying urinals	171	65.3	18	52.9	15	53.6	0.97	n
aring injections	225	85.9	27	79.4	22	78.5	0.97	n
ng injections	255	97.3	34	100.0	26	92.9	0.37	n
ng oral care to patients	242	92.4	31	91.2	24	85.7	0.37	n
ng pre-operative care to patients	240	91.6	32	94.1	24	85.7	0.81	n
ng post-operative care to patients	257	98.1	33	97.1	25	89.3	0.61	n
ing nasogastric tube	254	97.0	34	100.0	27	96.4	0.02	*
king drugs	211	80.5	26	76.5	20	71.4	0.43	n
nistering drugs	222	84.7	25	73.5	18	64.3	0.94	n
iving information on patients	247	94.3	33	97.1	23	82.1	0.91	n
ng information to patients	234	89.3	27	79.4	22	78.6	0.91	n
leting fluid balance charts	231	88.2	29	85.3	22	78.6	0.32	n
iving laboratory reports	225	85.9	30	88.2	22	78.6	0.53	n
eterising patients	246	93.9	31	91.2	26	92.9	0.64	n
of the unconscious patient	258	98.5	34	100.0	26	92.9	0.64	n
scitating patients following								
iac arrest	255	97.3	33	97.1	27	96.4	0.66	n
uring blood pressure	250	95.4	34	100.0	24	85.7	0.75	n
rding blood pressure	203	77.5	23	67.6	19	67.9	0.15	n
ng temperature and pulse	233	88.9	31	91.2	23	82.1	0.05	*
rding temperature and pulse	199	76.0	21	61.8	15	53.6	0.02	*
ng intravenous injection++	252	96.2	34	100.0	27	96.4	0.65	n
ng intramuscular injections	256	97.7	34	100.0	27	96.4	0.65	n
ilising equipment	228	87.0	31	91.2	23	82.1	0.66	n

+ Test of significance

* Comparison between Group A (whose courses exclude formal teaching of the life sciences) and Group B whose course included formal life sciences input. $p < 0.05$)

The generally high proportion of respondents whose views reflected the need for a knowledge of the life sciences in order to understand the significance of the listed activities is not surprising. It suggests that the need for an

understanding of the reasons for nursing actions is an important issue for nurse educators.

The present study is concerned with the differences, if any, between courses which exclude the life sciences and those which include them in nurse tutor preparation. It was therefore decided to see whether the views of clinical teachers and ward sisters differ on the need for a knowledge of the life sciences in order to perform the activities listed in Table 9:29.

The results are presented in Table 9:36.

Table 9:29

Nurse Tutor Students' Indication of the Need for a Qualified Nurse to Have Knowledge of the Life Sciences in Order to Carry out Specified Nursing Activities: Students with Ward Sisters/Charge Nurses and Clinical Teaching Backgrounds (n=248) Q.4

Nursing activities	Clinical Teachers (n=164)		Ward Sisters/CN (n=84)	
	n	%	n	%
care of pressure areas	158	96.3	61	72.6
care of intravenous infusion	161	98.2	64	76.2
testing urine	147	89.6	60	71.4
collecting specimens	133	81.1	47	56.0
emptying bedpans	76	46.3	35	41.7
emptying urinals	73	44.5	34	40.5
collecting and emptying bedpans	103	62.8	41	48.8
collecting and emptying urinals	102	62.2	41	48.8
preparing injections	142	86.6	53	63.1
giving injections	163	99.4	63	75.0
giving oral care to patients	156	95.1	60	71.4
giving pre-operative care to patients	154	93.9	59	70.2
giving post-operative care to patients	163	99.4	61	72.6
passing nasogastric tube	161	98.2	65	77.4
checking drugs	132	80.5	49	58.3
administering drugs	156	95.1	60	71.4
receiving information on patients	145	88.4	56	66.7
giving information to patients	144	87.7	56	66.7
completing fluid balance charts	144	87.7	54	64.3
receiving laboratory reports	156	95.1	60	71.4
catheterising patients	161	98.2	64	76.2
care of the unconscious patient	162	98.8	63	75.0
resuscitating patients following cardiac arrest	161	98.2	65	77.4
measuring blood pressure	158	96.3	62	74.8
recording blood pressure	130	79.3	46	54.8
taking temperature and pulse	151	92.1	55	65.5
recording temperature and pulse	126	76.8	41	48.8
giving intravenous injections*	161	98.2	65	77.4
giving intramuscular injections	161	98.2	64	76.2
sterilising equipment	148	88.4	59	70.2

Special in-service training is mandatory before authorisation.

The closeness of the above results is interesting. In particular, it should be noted that the differences between these two groups of 'teachers' are sometimes blurred because they both have direct access to patients and learners in clinical settings. However, it has been argued that the

additional teaching preparation of the clinical teachers is an important difference because, as Kirkwood (1979) noted, they have three essential areas of responsibility:

1. Teaching patient-centred nursing care
2. Helping students apply basic theoretical knowledge to the practice of nursing
3. Discussing patient care with individual and with small groups of students in the clinical areas

Although the ward sister is generally regarded as a 'teacher' of learners, recent studies have highlighted the inadequacy of her preparation for the role (Marson 1981; Farnish 1982; Pembrey 1980; Ogier 1980; Fretwell 1979; Orton 1980). Indeed, Farnish (1980) draws attention to the view of ward sisters that their teaching skills would be better developed by a closer link with both the wards and school and is thus expected to link theory with practice for the learners.

Comparisons between clinical teachers and ward sisters' responses as shown in Table 9:35 indicates that both are aware of the need for an understanding of the contribution of the life sciences to the performance of the listed nursing activities. There were no significant statistical differences between the two groups.

As noted above, the Diploma in Nursing of the University of London has been used as a pre-requisite for admission to the one-year courses particularly Part A of the Diploma. For this reason, further analysis was carried out on the data in Table 9:35 in order to establish any differences between clinical teachers and ward sisters/charge nurses with the same qualification as those without. The following hypotheses were

tested:

1. Clinical teachers and ward sisters/charge nurses with the Diploma in Nursing qualification will experience less anxiety in relation to the life sciences compared with those without this qualification (see Table 9:10, p). This was statistically significant (chi-square = 5.112 df = 2 $p < 0.05$). This suggests that those with this qualification were significantly less anxious in relation to the use of the life sciences.

2. Clinical teachers and ward sisters/charge nurses with the Diploma in Nursing qualification will express significantly more negative views on the use of the medical model (as defined in this study) in nursing education (see Table 9:10). This was significant at the 1% level (chi-square = 8.305 df = 2 $p < 0.01$). This again suggests a difference in perceptions of this group from those without the qualification.

There are wide variations in both informed and uninformed guesses as to what differences, if any, exist between female and male nurses in relation to the performance of nursing activities. The activities being considered in this study are particularly suitable for examining whether female and male tutor students will hold significantly different views on the need for knowledge of the life sciences in order to perform specified nursing tasks which were observed on the wards (Chapter VI). Table 9:30 presents the results.

Table 9:30

se Tutor Students' Indication of the Need for a Qualified
 se to Have a Knowledge of the Life Sciences in Order to
 arry out Specified Nursing Activities: Male and Female
 Students (n=320) Q.4

Nursing activities	Male Respondents (n=208)		Female Respondents (n=112)	
	n	%	n	%
Relief of pressure areas	200	96.2	105	93.8
Relief of intravenous infusion	203	97.6	109	77.3
Collecting urine	189	90.9	100	89.3
Collecting specimens	164	78.8	84	75.0
Changing bedpans	101	48.6	53	47.3
Changing urinals	101	48.6	50	40.2
Collecting and emptying bedpans	138	66.3	64	57.1
Collecting and emptying urinals	137	65.9	65	58.0
Preparing injections	179	86.1	94	84.0
Giving injections	206	99.1	109	97.3
Giving oral care to patients	194	93.3	101	90.2
Giving pre-operative care to patients	190	91.3	104	92.9
Giving post-operative care to patients	204	98.1	109	97.3
Inserting nasogastric tube+	106	50.9	110	98.2
Checking drugs	171	82.2	84	75.0
Administering drugs	196	94.2	104	92.9
Providing information on patients	187	90.0	94	84.0
Providing information to patients	184	88.5	97	86.6
Completing fluid balance charts	184	88.5	93	83.0
Receiving laboratory reports	204	98.1	112	100.0
Reorienting patients+	106	50.9	112	100.0
Care of the unconscious patient	204	98.1	108	96.4
Resuscitating patients following				
Cardiac arrest	204	98.1	109	97.3
Measuring blood pressure	199	95.7	108	96.4
Recording blood pressure	168	80.0	80	71.4
Measuring temperature and pulse	187	90.0	100	89.3
Recording temperature and pulse	159	76.4	76	67.9
Giving intravenous injections*	207	99.5	109	97.3
Giving intramuscular injections	205	98.6	109	97.3
Utilising equipment	187	90.0	99	88.4

Significant differences between Male and Female respondents.
 Special in-service training is mandatory before authorisation.

The results in Table 9:30 suggest that male and female respondents hold similar views on the need for a knowledge of the life sciences in order to carry out these tasks. Nevertheless, the two differences (marked + in Table 9:30) may be a reflection of the reported male technical temperament discussed above. Passing nasogastric tube and catheterisation are not, however, overtly technical and require as much the exercise of care, patient and understanding for their performance as the display of technical skill in practice. Any other differences in the views of the students were tested according to their sex and no significant differences were found.

A perennial problem in nursing education is the acknowledged mixed ability of learners and the need for the development of appropriate strategies by tutors which will cater for the diverse needs of learners. It is important that appropriate teaching methods be used in order to present difficult concepts in as many different ways as possible to ensure learners' understanding and later ability to use the knowledge gained from their studies. 80.9% of students in the sample surveyed were on one-year 'methods only' courses for whom the development of varieties of teaching method is especially emphasised during their preparation. Respondents were accordingly asked to state the importance they attached to four types of teaching method in relation to (a) theory and (b) practice, when teaching learners with varying levels of educational backgrounds. The results are presented in Table 9:31:

Table 9:31 .

Nurse Tutor Students' Indication of the Uses of Specified Teaching Methods* in the Teaching of Theory and Practice of Nursing in Relation to the Life Sciences (n=324) Q. 6a and 6b

	Group A (n=262)		Group B (n=34)		Group C (n=28)	
	n	%	n	%	n	%
Teaching Methods Identified						
Group Discussion						
Practice	206	78.6	27	79.4	20	71.4
Theory	204	77.8	20	58.8	23	82.1
Questioning Techniques						
Theory	197	75.2	25	71.4	21	75.0
Practice	155	59.2	21	61.8	19	67.9
Simulations to encourage						
Activity learning						
Practice	189	72.1	29	85.3	-	-
Theory	151	57.7	21	61.8	-	-
Project Assignment						
Practice	185	70.6	26	76.5	19	67.9
Theory	152	58.0	15	44.1	13	46.4

Chosen because they represent methods which demand an adequate knowledge base if the student is to use them effectively

The results represent a combination of responses, as one respondent may have chosen any combination of the methods. Table 9:38 is important in terms of its implications for this study, for a concern with the practical application of theory is a central concern for nursing education at all levels.

These techniques are particularly valuable for strengthening understanding of the application of knowledge in nursing practice, by making explicit the reasons for action, and it seems clear that students recognise this. Questioning techniques only rate as being more important for learning and understanding theory than for practice. This probably reflects students' experience, but it should be noted that skilful questioning can be a valuable means of illuminating practice.

Above all, these methods demand an adequate knowledge base, and it is important for nurse tutors to possess that base, and to be confident about their ability to draw upon it. The use of these techniques, without real understanding of accompanying knowledge base could constitute a real problem and, perhaps, one more source of anxiety.

9.66 Problems of anxiety in nurse tutor students

When all these factors are taken together, they represent a formidable catalogue of problem areas and challenges for teachers of nurses. The importance of anxiety and its effects on the individual have been extensively reported in the literature. Much of this has been concerned with patients' well-being (Hayward 1975; Wilson-Barnett 1977; Boore 1978). Learners' anxieties in relation to their training have been reported by Birch (1979) and Parkes (1980). One of the reasons for anxiety in learners found by Birch was the discrepancy between what is taught in the school of nursing and the reality of ward practice. This discrepancy is also evident in learners' written examination answers and what they actually do when faced with the reality of ward practice (Bendall 1975). On the other hand, Parkes's study reported clinical experiences on surgical wards as being more stressful for learners than on medical wards. She notes the demands made upon technical skills and specific knowledge which learners are required to demonstrate in the performance of technical care.

Both learner anxiety and the demonstrable gap between theory and practice have important implications for the education of nurse tutors. At the same time, very little thought appears to have been given to the anxieties which the teachers themselves might experience. In the GNC survey (1975), it was found that all grades of nurse teacher considered the conflict between education and service as the most unsatisfactory aspect of their work as teachers. In practice, this conflict is often translated into the broader issue of theory and practice in which the possession or lack of knowledge could be a crucial factor for the nurse teacher (Akinsanya 1984). In Table 9:31 above, respondents favoured the benefits of various teaching methods in relation to practice though their values of improving the quality of theoretical learning and understanding also received considerable emphasis.

Nevertheless, a question central to the present study remains i.e. the extent to which epistemological problems affect those who are being prepared to teach nursing. The life sciences, it has been argued above, provide a knowledge base to which nurses can go directly for a relevant underpinning of much of their professional practice. Yet their reliance on such a knowledge presupposes the ability of those who teach nursing to understand this knowledge base in such a way that they are clear about its application in practice, and can transmit this to learners. The evidence reviewed in the literature survey (Chapters II, III and IV) suggests that at least five areas represent possible sources of anxiety for

nurse tutor students. Respondents were asked how often they felt concerned in relation to each of the five areas. The results are shown in Table 9:32:

Table 9:32
Nurse Tutor Students Who Felt Concerned 'Often' or 'Always'
About Teaching the Life Sciences for the Following Reasons
(n=324) Q.5

	Group A(n=262)		Group B(n=34)		Group C(n=28)	
	n	%	n	%	n	%
Possible causes of anxiety in nurse tutor students						
Lack of adequate knowledge of the subject myself	222	81.7	31	91.2	26	92.9
Attempting to simplify biological facts to learners	217	82.8	29	85.3	26	92.9
Having to rely on the medical model to explain biological aspects of nursing care	195	74.4	29	85.3	18	64.3
A shortage of books and teaching materials prepared by specialist nurses	180	68.7	27	79.4	26	92.9
Lack of access to patients while on teaching practice	155	59.2	25	73.5	8	28.6

**Combinations of these responses were stated by respondents.

Comparisons of these responses produced no significant differences between the groups. It should be noted, however, that students in Group C normally have access to patients by virtue of their part-time study and regularly work with learners as clinical teachers as shown in Table 9:30 and 9:31. When these areas of concern are related to the specific nursing activities performed by learners in the wards and other clinical settings, it will be appreciated that the difficulties experienced by tutors have important bases in the application of theory to practice.

Overall, the results demonstrate a considerable level of anxiety in students in relation to teaching learners how to apply the life sciences to patient care, much of it due, apparently, to inadequacies in the input in their own preparation, and to a lack of printed material appropriate to their needs e.g. textbooks.

9.7 Conclusions

In the light of the above evidence, the main research questions may be answered as follows:

1. Nurse tutor students are, in general, well qualified educationally and professionally on entry to their courses. The possession of the Diploma in Nursing appears to be helpful in relation to an understanding of the role of the life sciences in their preparation. However, the exclusion of these subjects from one-year courses may be an undesirable condition and needs to be reviewed.
2. The differences between the three types of course are matters of general rather than specific issues. The Group A course, by its nature of concentrated one academic year commitment, appears to be favoured by respondents. However, it should be noted that part-time two-year courses are not only the more effective in terms of theory-practice link desired by the profession, but they also are more cost-effective and helpful to students. As noted above, the Briggs Committee (1972) favoured this approach and respondents on these courses have apparently found the arrangement satisfactory from the point of view of their domestic commitments.

3. The overwhelming evidence suggests that the life sciences are not only important to the professional development of students, but are seen to be so. For, irrespective of the type of course being attended, respondents were emphatic on the important role that a knowledge and an understanding of these sciences play in the performance of nursing functions. The views of nurse tutor students reflect a general professional approach which regards the possession of knowledge as important provided it is applied to practice. The life sciences emerge from this survey with a clear recognition of their usefulness and importance to the needs of learners and their future teachers. It is clear that institutional policies affect the way the students viewed the role of the subjects in their preparation. With the demise of the STD course, the issues raised by the formal exclusion of the life sciences from existing courses needs to be examined. The views of course directors will therefore be considered in Chapter X.

CHAPTER TEN

CHAPTER OUTLINE

PART III

THE MAIN STUDIES

CHAPTER X

THE LIFE SCIENCES AND THE PREPARATION OF NURSE TUTORS: COURSE
DIRECTORS' VIEWS

(STAGE IIB)

- 10.1 Introduction
- 10.2 Interview design
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CHAPTER X

THE LIFE SCIENCES AND THE PREPARATION OF NURSE TUTORS: COURSE
DIRECTORS' VIEWS

(STAGE IIB)

10.1 Introduction

At the time of this study, twelve institutions offered courses for the preparation of teachers of nurses in England and Wales. These courses were approved by the GNC and validated by either universities or the Council for National Academic Awards (CNAA). The long-established Sister-Tutor Diploma of the University of London under the Extra-Mural Department was later phased out to be replaced by the Diploma in Nursing Education of the University. The courses for the preparation of teachers of nurses are now of two kinds:

1. Those preparing clinical teachers in either six-months full-time or one-year part-time. In the former case, the certificate is awarded by the RCN and it entitles the successful student to register with the GNC as a clinical nurse teacher (RCNT). The latter course is the City and Guild's Further Education Teachers' Certificate (No.730) or FETC. In this case, a successful candidate is registered as RCNT by the GNC if successful in the Part A of the Diploma in Nursing of the University of London.

2. Those preparing nurse tutors in two-years full-time for the Sister-Tutor Diploma of the University of London (STD) or the Diploma in Nursing Education (DipNEd) after a one-year

full-time course or two-year part-time as described in Chapter IX.

Each of these courses has a course director or tutor whose responsibility covers recruitment, admission and general administration of the course. For this reason, a course director is in a special position to discuss all aspects of the course. It was therefore decided to canvass the views of course directors on related issues of the biological/life sciences content of the various courses. In view of the differences in these courses, the growing demands on the knowledge-base of teachers and the increasing emphasis on 'how to teach' rather than 'what to teach' in these courses, the study aimed to investigate how course directors view these conflicting needs of the future nurse tutor. In particular, the surveys of learners and nurse tutor students described above have highlighted a number of issues which affect nursing educationally generally and that of teachers specifically. The evidence presented in Chapter IX suggests that, despite the claims of course planners, much student anxiety is still experienced in relation to teaching the life sciences - anxiety which their course of preparation is not always alleviating, in spite of the perceived importance in the students' view of the role of the life sciences in this preparation. Indeed, evidence of an inadequate knowledge base in the life and related sciences has been a source of concern for a number of year now (Gotwald 1972; Murray 1973; Miller 1975; Jones 1976; Stark 1984).

Moreover, the views expressed by various contributors in recent years have been consistent on the need for changes to be made in nurse tutor preparation (Watson 1976; Allan 1980; Green 1981; Hayward 1982). Across the Atlantic in North America, the university-based education of nurses on a large scale with the full exposure to studies of the relevant sciences at this level has ensured continued interest in the knowledge base of teachers and clinical nurses (Downs 1984).

In the light of these considerations, two main research questions were addressed for the course directors' study.

1. What are the general and specific(i.e. life-science-related factors) which determine the nature and purpose of nurse tutor preparation?
2. What are the views of course directors on the contribution of the biological/life sciences to the preparation of nurse teachers?

10.2 Interview Design

From the methodological reviews in Chapter VII, it was decided to use a structured (standardised) interview format for the course directors. This would ensure that each respondent was presented with identical, uniformly worded questions and that responses would reflect individual and institutional common policies or differences. As with other parts of this work, attempts to locate an existing, validated instrument was unsuccessful although the literature provides helpful information on the uses of this type of tool. It was

therefore decided to develop an interview schedule (on which course directors' views would be sought) based on the following areas of research interest:

1. Educational - information on entry qualifications i.e. general admission requirements such as GCE 'O' and 'A' levels or their equivalents.
2. Professional - registrable basic and post-basic qualifications e.g. SRN, DipN and RCNT as entry requirements.
3. Biological/life sciences - data in this category included items concerned with institutional policies about course contents and particularly the life sciences and the students' preparation to teach them.
4. Teaching practice - information in this category concerns the specific supervision given to students in the life sciences and generally during teaching practice.
5. Facilities - into this category fall data on facilities in colleges and hospitals for the teaching and learning of the life sciences.
6. General - items in this category cover questions of professional interest such as the need for research and the development of a knowledge base for nursing practice.

An interview schedule, based on the above categories, was prepared in the form of a blueprint in which individual questions were identified. This was important for two reasons. Firstly, it helped in the delimitation of the information required and thus focused the questions to be included. Secondly, it enabled decisions to be made on the appropriate wording of questions and the form they would take in order to obtain the desired information.

In this initial approach to the design of the interview schedule, serious thought was given to the question of bias in verbal self-report technique which could affect the reliability and validity of the interview schedule. This is because of the general view that all one-year courses were 'methods only' orientated and respondents' views on the life sciences in nurse tutor preparation may well be prejudiced by this institutional curricular policy. For this reason, it was decided to exclude questions that might lend themselves to such biases.

10.21 Validity and reliability of the instrument

These are important considerations and were satisfied in two ways. First, the interview schedule was submitted to members of the DHSS advisory panel as well as the course directors to establish its validity as a means of collecting the required data, both factual and matters of opinion (i.e. whether coverage of questions and quality were both satisfactory). This also provided a measure of interrater reliability in that comments on the draft schedule helped in the refinement of the instrument. This process was continued during the development by a constant review of the schedule in the light of new information or comments. Secondly, a pre-testing of the instrument was carried out by conducting interviews with two members of the departmental staff on two different occasions. This pre-test stage also enabled the researcher to use a tape recorder in order to establish timing and physical arrangements. Repeated practice in the

use of the schedule and the tape recorder was undertaken and it was found that, on average, the information sought could be obtained within an hour. A final draft of the interview schedule was prepared and submitted to the advisory panel for comments and further review. Following these exercises, a modified and refined interview schedule was prepared for use (Appendix 8).

10.3 Data Collection

It was essential that the views of course directors should be fully canvassed in England and Wales as there were only twelve centres responsible for the preparation of nurse tutors. Considerable thought was given to the most appropriate and effective way of achieving this objective and the possibility of using a questionnaire was explored and rejected. This was because the questions under each category described above would have led to a lengthy questionnaire similar to that of the nurse tutor students. This would be unsuitable for use with busy course directors at that particular time of the year i.e. the end and beginning of two consecutive sessions. An informal contact with two course directors established the acceptability of a personal hour-long interview and, as noted in Chapter VII, this is a more methodologically satisfactory arrangement with a small-scale survey of this nature. It was therefore decided to interview all course directors (n=12) in order to cover all local situations. The semi-structured format of the interview schedule would enable information to be collected on the more general quantitative aspect of the survey while

the extensive and richer qualitative data would be tape-recorded.

10.31 The sample

This consisted of all designated course directors for nurse tutor courses in the colleges preparing nurse tutors in England and Wales (n=12). Again, because numbers are relatively small and the geographical locations widely spread, it was decided to include all the course directors.

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Table 10:1

Institutions preparing Nurse Tutors in England and Wales
(1979-1982)(n=12)

Course Centre	Type of Institution	Duration	Course Type
A	Technical Education	One Year	Full-time
B	Polytechnic	One Year	Full-time
C	University Department	One Year	Full-time
D	Teachers' College	One Year	Full-time
E	Technical college	Two Years	Part-time
F	Polytechnic	One Year	Full-time
G	College of FE*	Two Years	Part-time
H	Teachers' College	One Year	Full-time
I	Professional College	One/Two Years*	Full-time
J	Polytechnic	One Year	Full-time
K	University College	One Year	Full-time
L	Polytechnic	One/Two Years*	Full-time

The two-year full-time course was discontinued by the University of London in 1982

It will be seen from Table 10:1 that only two centres provide the part-time course for the preparation of nurse tutors. As these courses are attached to centres for full-time courses, the same approach was adopted by course directors. Indeed, admission was centralised by the course director for the main full-time course and students on part-time courses regularly

have opportunities to visit the main centre for certain parts of their subjects of study. Philosophically and educationally, therefore, there is no difference in the main approach to these two type of courses as far as the life sciences are concerned.

10.32 Procedures and preliminaries

Each of the twelve course directors was contacted by means of a letter which stated the aim of the study and listed the categories under which the interviews would be conducted (Appendix 8). An invitation was extended to all twelve directors to take part in the study. A 100% acceptance was received. Further contacts were made by the researcher by telephone in order to agree upon convenient dates for the interviews. The interviews were arranged over ten months between May 1980 and February 1981. This arrangement allowed the researcher to organise visits on a regional basis so that advantage could be taken of special rail fares, thus minimising the cost of travel. Whenever possible, two visits were arranged for the same day and overnight stays avoided.

Interviews were conducted between 12.00 and 3.00 on each occasion. This allowed for journeys to be made early in the morning and completed later in the afternoon. This arrangement, though convenient, was disadvantageous in one important respect. When two people were present at interviews, these took much longer than had been anticipated. Because of this, it was necessary to re-arrange some of the visits so that only one institution was visited on a

particular day. The limited time after interviews before departure also prevented the researcher from accepting the generous hospitality offered by respondents.

10.33 Administration

For each interview, after the formal reception and location of the interviewer's office, the standard introduction to the project was made by the researcher:

Thank you for agreeing to take part in this study. As you know this survey of the role of the biological sciences in nurse tutor preparation is being sponsored by the DHSS. We have already received completed questionnaires from your students which are now being analysed. The purpose of this interview is to obtain information on some aspects of the course in this college.

At this point, interviewees were asked whether they had read an earlier article by the researcher and the project director on the subject of the study. All course directors with nursing background confirmed that they had read the article. The interview format was agreed with all respondents. The introductory remarks were then continued:

I would like to record the interview for later transcription if you would give us permission to do so. The interview schedule will be completed during the interview and all information received will be treated with absolute confidence. The name of the individual or institution will not be mentioned in any report.

When the above information was accepted and its purpose agreed, the researcher concluded the introductory remarks:

Thank you. Can I begin by asking for some personal details.

All respondents agreed to the use of the tape-recorder and the interview was conducted as planned in every case. At the end of the interview, the researcher again thanked the course directors and their colleagues where present. Questions on the study were then invited with the tape recorder switched off. The opportunity was taken to discuss the general response of nurse tutor students to the survey described in Chapter IX and, where appropriate, help was again sought in getting non-respondents to complete the questionnaire.

10.4 Data analysis

The pre-coded interview schedule yielded quantitative data which were analysed for frequency distributions and descriptive statistics using the SPSS as described above. Because the numbers involved were small, no attempt was made to calculate percentages but the number of course directors who answered specific questions are given in Table 10.1. The views expressed by course directors and any supportive staff present at the interview were extensive and covered the items contained in the interview schedule. These constitute the qualitative data discussed in sections 10.6 and 10.7.

10.5 Quantitative Data: Result and Discussion

 From the completed interview schedule for each interview, pre-coded responses were analysed as shown in Tables 10:2 and 10:3.

10.51 Tutor training course and qualification of interview participants

 In order to provide a professional reference point for an evaluation of the views of course directors, it was considered helpful to ascertain their individual preparation as teachers themselves. The results are shown in Table 10:2 below.

Table 10:2

Type of course attended, qualifications and present designation of staff participating in the interviews

Course	Centre	Institution Attended	Qualification	Present Position
A		Battersea College*	STD+	Principal Lecturer
B		Bolton College	Cert Ed	Principal Lecturer
C		Battersea College	STD	Lecturer
D		Battersea	STD	Principal Lecturer
E		Non-Nursing Staff	Cert Ed	Lecturer
F		Battersea	STD	Principal Lecturer
G		Non-Nursing Staff	Dip Ed	Principal Lecturer
H		Queen Elizabeth College	STD	Senior Lecturer
I		Royal College of Nursing	STD	Course Tutor
J		Battersea	STD	Principal Lecturer
K		University of Surrey	CHNT	Course Tutor
L		Battersea	STD	Principal Lecturer

 Now the University of Surrey
 rt Ed - Certificate in Education
 NT - Community Health Nurse Tutor

Thus 11 of the 16 interviewees had themselves undertaken the STD course and would have been exposed to the substantial input of the life sciences associated with that course.

Although the exclusion of subject-matter from the one-year courses is a matter of statutory and institutional policy, the views of staff concerned with these courses would throw a light on their perceptions of the role of the life sciences in nurse teacher preparation. The chi-squared test for significant differences was used to test the null hypothesis that:

The type of course attended by course directors is not related to whether they rated the contribution of the life sciences in nurse tutor preparation positively.

The null hypothesis is rejected at the 5% level of significance. It can be concluded, therefore, that previous experience of the STD course has no influence on the way that course directors perceive the role of the life sciences in nurse tutor preparation. In particular, it would seem that the views of respondents on the formal exclusion of these sciences from the 'methods only' courses is not affected by the type of course that individual course directors attended. This suggests that institutional and statutory policies influenced much of course directors' responses.

10.52 Quantitative Data Concerning Nurse Tutor Courses

Quantitative data obtained from the interview schedule covered:

- i) entrance requirements for the course, both educational and professional
- ii) formal teaching of the life sciences on the course and if so, by whom

iii) the importance of the life(biological) sciences in nurse tutor preparation to the teaching of the life sciences in their own courses

v) whether or not the effectiveness is evaluated

vi) teaching methods in use in their own courses

vii) supervision of teaching practice and particularly of biological contents of lesson

viii) liaison with schools of nursing, and schools' role in teaching practice both generally and in relation to the life sciences

ix) library and other facilities

Table 10:3

Pre-coded Responses of Course Directors* to Questions on
Interview Schedule (n=10)

interview schedule	Response of course directors	N
course requirement	Professional experience as stipulated by GNC	10
	Passes in 2 GCE 'O' levels	3
	Passes in 5 GCE 'O' levels	7
	GCE 'A' level desirable	1
course requirement	Passes in sciences subjects at 'O' level	4
qualifications	DipN Part A required	8
and JBCNS certificates	DipN Parts A and B required	8
		10
professional qualification required	SRN and RMN (separately)	9
	Dual (SRN/RMN/RSCN/RNMS)	1
knowledge of the clinical sciences	Sufficient if passed Part A only	8
	Sufficient if passed DipN Parts A and B	2
of entrance test teaching	To test general knowledge and aptitude	4
clinical sciences	Included in the course	2
	Excluded	8
of inclusion	Through specialist lecturers	2
involvement of medical staff	Medical staff excluded	9
	Medical staff included	1
teaching biological aspects	By non-specialist staff	5
	Taught by specialist staff	2
	Taught by nurse tutors	3
teaching methods in use	Lecture	10
	Seminar	10
	Clinical involvement	2
	Group discussion	10
	Project assignments	8
	Tutorials	10
	Video-recording and CCTV*	10

Table 10:3 continued

the importance of cal sciences in nurse preparation	Very important	8
	Important	2
iveness of the approach teaching of the cal sciences in the ne	Approach is effective	7
	Biological sciences not taught	3
used in the evaluation use of the biological s in nurse tutor tion	Effectiveness not evaluated	7
	Methods in use are effective	3
ment of students in sed teaching	Encouraged but not enforced	10
sion of students' g practice	By college and hospital staff	10
sion of biological s of lessons	Difficult for non-nurse supervisors	10
sion of lessons	Before it is given by the student	8
lesson supervision d comments	Discussion of contents and offer of	5
d written comments while lesson g prepared		5
number of visits ents when on g practice	3 visits per term	3
	4 or more visits per term	7
with schools ing	Regularly - at least monthly	10
rma report given by ool on each student at of teaching practice	Yes - formal reports are given	10

Table 10:3 continued

cific references made teaching of the cal sciences in such ?	Yes - references are made to the	
s' teaching related biological sciences		5
	Normally a general report is issued	5
facilities for cal/medical and nursing s	Adequate and satisfactory	10
on of a separate facility for the use e tutor students in the ents	General library facilities are	
le and meet the needs students		10
journals regularly y the institutions es	Nursing Times	10
	Nursing Mirror	6
	Nursing Research	10
	Journal of Advanced Nursing	7
	International Journal of Nursing Studies	5
	Nursing Outlook	6

The above findings may be summarised as follows:

1. Eight of the twelve course directors qualified as nurse tutors through the Sister-Tutor Diploma of the University of London.
2. Two course directors were non-nurses. 3. Four courses were based in polytechnics, two in universities, two in teacher training colleges, two in technical colleges, one in a further education college, while one was based at the RCN.
3. Three course directors would accept a minimum of two 'O' levels provided professional qualifications and references were satisfactory. Nine required five 'O' level passes.

4. Eight institutions did not stipulate passes in science subjects whilst four insisted on a science subject and English Language.

5. Nine courses would admit applicants with RMN or RNMS (Registered Mental Nurse and Registered Nurse for Mental Subnormality) whilst three would do so with considerable reservation.

6. Ten course directors would accept Part A of the Diploma in Nursing, but two insisted on both Parts A and B.

7. Nine of the course directors accepted that the Diploma in Nursing provided adequate background knowledge of the life sciences for intending nurse tutors. Three considered the knowledge inadequate.

8. Entrance test were conducted in four institutions mainly for aptitude, literacy and numeracy. Eight course directors were not convinced of the usefulness of such tests.

9. Two courses had a specific life science module while ten completely excluded such specific input from their courses.

10. Three of the course directors favoured the use of qualified nurse tutors for the responsibility of linking the life sciences to nursing on their courses.

11. Eleven course directors excluded medical participation in the preparation of nurse tutors while medical participation was still central in the only course for the STD at the time of the survey.

12. Three institutions specifically evaluated the use of the life sciences by students during the course, while five institutions specifically supervised lesson preparation in the life sciences. In general, all course directors used

designated tutors in schools of nursing for regular but unobtrusive supervision of students when in the school of nursing.

13. On average, six supervised visits were paid to each student by college staff during the academic session.

14. All courses provided schools of nursing with standardised forms for the evaluation of student tutor teaching sessions. Seven course directors welcomed and encouraged comments from schools of nursing on the student tutor's use of the life sciences while five were not particularly concerned about subject-matter at all.

15. Library facilities were viewed as adequate in all the established institutions but a newly established course was dependent on a school of nursing for this. All institutions reported subscription to major nursing journals published in the United Kingdom.

The evidence indicates that all courses reflect the GNC's stipulated entry requirement in terms of professional experience prior to undertaking the preparation as a nurse tutor. There are variations, however, in relation to the educational qualifications, with three institutions accepting 2 GCE 'O' level passes. Although 9 of the courses would accept single registrable qualification e.g. RMN, it was clear from the interviews that an applicant with such a qualification would be advised to consider future career development particularly as dual qualification could well be essential.

On the whole, medical lecturers are discouraged with only one course retaining the medical contribution. As this was a two-year full-time course, the medical participation is a requirement of the syllabus in order to cover pathophysiology. The teaching of the life sciences thus becomes an important issue and only in three courses are these taught by nurse tutors themselves. This has implications for the teaching practice supervision and particularly that of the biological contents of lessons. Because the teaching of the biological sciences is formally excluded from the majority of the courses, however, the need for such supervision and the evaluation of the effectiveness of these biological sciences approach to students' teaching was apparently being disregarded. It is interesting to note, however, that all course directors were vehement in their views that the development of a knowledge base in the life sciences is crucial to the future development of nursing education. These and other issues will be examined in more depth later in this chapter and in Chapter XI.

While these coded responses represent quantifiable data from which inferences may be made, they are treated in this study as pointers to the underlying views of course directors, with all the elements of subjectivity implied in recorded interviews. There is nevertheless a strong suggestion in the data that the life sciences occupy what may be termed the 'hidden' aspect of the syllabus for the preparation of nurse tutors. Clearly, the use of the sciences is implicit in the coded responses whether or not formal exclusion of the subjects is an institutional policy. It is evident that

course requirements vary from institution to institution and the Diploma in Nursing (either Part A, or Parts A and B) represent a major admission requirement to the nurse tutor course. It would also appear that the RCNT qualification and the JBCNS certificates are considered to be important background preparation for entry to nurse tutor courses. All that can be said at this point is that coded-responses provide a starting place for the analysis of the recorded interviews.

10.61 Procedure for transcription of recorded interviews

 Respondents were forthcoming and definitive in their views. Before transcribing the qualitative data, part of the recorded materials were presented to members of the DHSS advisory panel for information and comments on the interviews. The data were later transcribed using a special audio-recorder transcriber.

The researcher personally transcribed each tape as attempts to enlist the help of a transcriber proved inappropriate due to repeated requests for explanations of what an interviewer had said where terminologies had been used. The acoustics had been rather bad in some cases and this made transcription difficult.

All tapes were marked with the names of the interviewees and the institutions where they were recorded. The transcribed notes were checked on two separate occasions by the researcher matching the notes with recorded sounds for each

tape. This enabled corrections to be made to wrongly transcribed expressions. The final typed notes were then content analysed.

10.62 Method of content analysis

Because of the length and audio-complexity of the recorded interviews after transcription, the process of content analysis was prolonged and extensive. The theoretical issues in content analysis were discussed in Chapter VII and it is now proposed to examine specific aspects related to the present study. Content-analysis has been defined as 'any technique for making inferences by systematically and objectively identifying specified characteristics of messages (Holsti 1969). This inferential nature of content-analysis is crucial in that for inference to be valid and reliable, the method of analysis must itself reflect these attributes. Approaches to content-analysis were discussed above and the paramount need for objectivity through the use of explicit rules for analysis was noted (MacLeod-Clark 1982; Fielding 1982). As mentioned above, the use of coders has been advocated as means of ensuring objectivity in analysis. Thus Fielding's (1982) self-coding approach has been questioned on methodological grounds because the use of independent coders would have produced a more objective coding. An important aspect of this independent coders' role is the influence of paralingual aspects on content analysis i.e. pitch, volume, rate, emphasis and non-verbal gestures. The interviewer or observer, having been party to these experiences, could be influenced during analysis simply because the experiences are

themselves part of the exercise. An independent coder who had not shared such experiences is therefore more likely to be concerned objectively with the materials being analysed rather than with the paralingual nuances that accompanied them. However, while this pursuit of objectivity and reliability of inferences drawn is important, it must be admitted that the nature of the data used for content-analysis lend themselves to various approaches none of which could be described as being methodologically perfect. The world of subjective data is often an imperfect one and research methods should attempt to bring a degree of acceptable objectivity to it.

One method which overcomes this problem is the use of process analysis described by Bales (1951) in which materials can be examined in terms of the information flow which highlights paralingual issues. The present study is not concerned with such issues and it is therefore suggested that there is a mid-point approach which provides an acceptable level of rigour in analysis while retaining a major researcher-involvement in the method of coding. This method of analysis is directed towards manifest contents of the recorded interviews i.e. overtly expressed views of the interviewees. It is also possible, because of the nature of the questions posed, to examine latent content of the interviews (i.e. hidden or unconscious expressions) within the materials which can be coded. This mid-point approach is supported by the literature. For instance, Chao (1979) suggests that the researcher could code units of behaviour

(or analysis) such as a word or theme on two separate occasions with an interval of two or more months. Subsequently, an independent coder could be used to sample pages of transcripts randomly using the researcher's descriptive categories. Chao argues that because it involves the researcher and an independent coder (i.e. the degree of agreement between them), the resulting coding will be more objective and reliable than if the researcher alone has carried it out.

In view of the problems highlighted in the literature, it was decided to use two approaches for the analysis of the transcribed interviews. In the first of these, Holsti's (1969) guide to methods of content-analysis was used. This involved the definition of the problem being investigated, the identification of characteristics to be measured and the selection of the unit of analysis. The latter was the most critical of the steps and, as Berelson (1954) advocated, the most useful units of analysis in this type of study are words, themes or items.

Thus each transcript was read through by the researcher and an item selected for the unit of analysis. The number of occasions on which a specific item was mentioned was noted on a grid prepared for the purpose. For instance, educational and professional backgrounds of nurse tutor students constituted an aspect of admission procedure. While reading a transcript, therefore, a note was taken of each occasion on which the educational and professional backgrounds of

students were mentioned or referred to by the interviewee. This was categorised under the theme: 'general education of applicants'. In a similar way, references to 'general or specific professional qualification' was placed under the theme concerned with professional preparation of applicants. Individual units within themes were coded and categorised by the researcher on four separate occasions in one year. At least three months elapsed between each coding and categorisation exercise.

During these exercises, it soon became clear that large numbers of categories would have to be dealt with and interpreted. Moreover, although the frequencies of occurrence of each unit/theme could be obtained, it was decided to subject these to a proportional exercise so that percentages could be calculated for the identified themes. Table 10:4 presents the results but it is important to discuss the special method used for the calculation of percentage weightings in order to determine what was termed 'relative weight or emphasis' placed on these themes.

In order to determine the relative weight or emphasis placed by respondents on a theme categorised from the transcribed responses, the categorised themes were arranged in blocks of 10 units. Thus when a unit occurred on ten occasions, this counted as one 'block unit' designated BU in Table 10:4. The effect of this was to reduce each unit to 1/10th of a block unit (BU). For each theme so identified and categorised, the number of blocks in the grid was counted and any resulting fractions noted. For example, there were 33 blocks and 8

units under the education theme. In effect, this would be 338 units but using the block system (developed for this study), this became 33.8 BU in Table 10:4. It was important, however, to determine the degree of emphasis placed on each theme by the respondent as an indication of the importance attached to that theme. This led to the development of the concept of 'percentage weighting' which was arrived at as follows:

For each theme, the block units (BU) were divided by the total number of coded responses (TCR) and multiplied by the number of respondents/coders (n) i.e.

$$\text{Weighting} = \frac{\text{BU} \times n}{\text{TCR}} \quad (i)$$

where BU = block unit
 n = number of respondents, coders
 TCR = total coded responses

Hence the percentage weighting for each theme (which denotes the degree of latent emphasis by respondent) would be obtained by multiplying the product of (i) above by 100 to give:

Percentage weighting of theme (PWT):

$$\text{PWT} = \frac{\text{BU} \times n}{\text{TCR}} \times 100 \quad (ii)$$

with the notations in (i) above.

The appropriateness and legitimacy of the use of block units was checked with a statistician who agreed that it did not alter the data in any way, but merely makes them mathematically more manipulable.

These two formulae were used to calculate the percentage weighting of the themes as a reflection of the relative emphasis on each categorised theme in the transcribed materials. Thus the PWTs for all the themes can be compared as a means of identifying 'factors' upon which course directors placed the most emphases during the interviews. For the purposes of interpretation, it was felt that weightings below 30% for a theme would represent an area in which respondents were less emphatic during the interviews and, by implication, saw it as of less importance. Although this reasoning could be challenged on the grounds that the inferred lack of emphasis might be due to reasons other than that assumed for the purposes of this study, it was considered appropriate in that any assumed lack of emphasis could be directly checked by reference to the transcribed interviews themselves. This was done by sorting individual responses in positive and negative piles for each question.

This is particularly important because the majority of courses concerned formally excluded the life sciences from their syllabuses and hence the only means of establishing the views of respondents was to examine the latent content of the responses. The method devised above would seem to provide a thematic approach to the establishment of the nature of course directors' views. For the above method to be valid and reliable, it was important to pre-test the categories and coding methods. This was carried out by using Chao's approach and four consecutive categorisation and coding exercises followed by the calculation of relative weighting of themes

by the researcher, produced consistent results. In order to establish a reliability co-efficient for this new method, however, it was realised that a larger sample would be required hence there is a serious limitation to the use of the method.

Nevertheless, the inferential aspect of the coding system had to be simplified. This was achieved by grouping the responses in terms of 'factors'. For example, on the main theme concerned with admission procedures, the factors which influenced this theme were identified and categorised. Thus 'college educational policy' would be a factor that influenced a course director's recruitment strategy. Similarly, individual perceptions of course directors on the admission requirements formed part of a theme related to such items as the use of the life sciences and the teaching/learning strategies used by the institutions to ensure that nurse tutor students are prepared to cope with later demands on their knowledge base in these subjects.

The grouping of themes into factors was important, therefore, because it was the means by which respondents' relative emphasis on the categorised themes were to be established. However, it must be admitted that they have only a limited effect on the search for answers to the main research questions which are concerned with the general life sciences contribution to nursing education generally and those who teach them specifically. Moreover, while the reliability of selected themes could be ensured by agreement of separate

coding by the researcher on different occasions (Chao 1979), inferences of the views of respondents could not be reliably made on this basis alone.

For this reason, the second approach was used. This involved the duplication of interview transcripts which were numbered and attached to coding sheets. The pre-test of the coding sheet was carried out by asking two nurse tutors to analyse and code two identical but randomly selected transcripts using the coding sheet. This required coders to read, analyse and then decide whether a particular response was positive, negative or neutral as regards the main issue being investigated i.e. the contribution of the life sciences to nurse tutor preparation. The interrater reliability was judged by the closeness with which the two coders agreed. There were no discrepancies in the coding overall though the neutral response code appeared more difficult to categorise. The transcripts and coding sheets were re-examined and following refinement of the coding sheet, it was decided to widen the scope of the study for the final analysis.

10.63 Procedure for independent coders

The transcripts were numbered in sequence based on the questions from the researcher and answers by respondents for each interview conducted. The length of the transcripts varied but each covered all the areas in the interview schedule so that a lengthy transcript was due either to the participation of two interviewees or long answers by an individual respondent. Each transcript was then independently

coded again by two nurse tutors from the 18 randomly selected for the exercise. The coding was carried out by each reading the answer to a question and then deciding on whether, on balance, it was judged to convey to the coder:

1. A positive view in support of the role of the life sciences in nurse tutor preparation.
2. A negative view in relation to the role of the life sciences in nurse tutor preparation.
3. A neutral response which, judged by the coder, does not appear to support either of the above views.

Nine transcripts from the twelve recorded interviews were randomly selected by the researcher for independent coding. Eighteen coders senior tutors (n=4) and nurse tutors (n=14) who had agreed to participate in the study were circulated with the transcripts and coding sheets. The inter-coder agreement was calculated for answers coded positive as these reflected support for the role of the life sciences in nurse tutor preparation. The method described for the calculation of PWT above was used to obtain the proportions for each type of response.

10.7 Qualitative Analysis: Results and Discussion

As has been indicated in section 10.6, the responses of course staff to specific questions were analysed by the researcher as a first step. The results are presented in Tables 10:4 and 10:5.

Table 10:4

Course Directors' Coded Responses and Factors Influencing
Admission Procedures (n=16)

Theme	BU	N	TCR	BUxn/TCR	PWT%
University/College					
Policy	7.1	16	236	0.481	48.1
Experiences in DipN					
(and B)	5.4	16	236	0.366	36.6
Post-registration	4.3	16	236	0.291	29.1
Other/Cellaneous*	4.2	16	236	0.285	28.5
RCNT qualification	2.6	16	236	0.176	17.6
g. Age of applicant and DNE recommendation					

Note: BU = block units of responses coded
N = number of respondents
TCR = total coded responses
PWT = percentage weighting on theme

The results indicate that, for all the categorised themes, less than 50% weightings apply in consideration of admission to these courses. This is a surprising finding, particularly because both the Diploma in Nursing and RCNT qualification were repeatedly mentioned as essential admission requirements by course directors. As reported in Chapter IX, a large proportion of students surveyed possessed these two qualifications on admission. In spite of the low weighting, university/college requirements appear to be the most important influence on admission procedure followed by the possession of the Diploma in Nursing. The influence of other factors such as post-registration experience and the qualification as RCNT do not appear to be heavily weighted in admission procedures. Certainly, approval of post-registration experience of applicants by the GNC (ENB) is compulsory and that decision lies outside the control of

course centres.

It may be inferred from Table 10:4 that course directors are influenced by a number of factors of which college admission policy is the most influential. Nevertheless, there are other factors that are taken into consideration in the preparation of nurse tutors. Because of the overwhelming number of one-year full-time courses compared with the two-year full-time and two-year part-time (and the small number of course directors involved), a comparison could not be made between these courses. However, analysis of the transcribed materials suggests that five factors are important in nurse tutor preparation as viewed by the present study. Table 10:5 presents the results of course staffs' views.

Table 10.5
Course Directors' Coded Responses and Factors Considered
Important for Nurse Tutor Preparation (n=16)

Theme	BU	N	TCR	BUxn/TCR	PWT%
Various general education	33.8	16	1046	0.517	51.7
General and specific professional qualification	30.9	16	1046	0.473	47.3
Theory and application of the life sciences	27.1	16	1046	0.498	41.5
Knowledge base in life behavioural science and nursing	6.4	16	1046	0.098	9.8
Doing research	6.4	16	1046	0.098	9.8

Note:

B = block units of responses coded

N = number of respondents

TCR = total coded responses

PWT = percentage weighting on theme

The results raise a number of questions. They show, for example, that previous general education of applicants is an important factor. As we have seen in Table 10:4, university/college admission policy was seen by respondents as the most important factor. Educational qualification is an area of institutional autonomy and over half of respondents appeared to have emphasised this requirement. Clearly, too, once the institutional requirement for educational background is satisfied, the professional eligibility has to be considered and its second position could be accounted for by this consideration. Nevertheless, all the evidence suggests that the GNC's stipulated minimum of two years' post-registration experience in a position of responsibility (normally that of a sister or charge nurse) is strictly adhered to by course directors.

It is also interesting to note that the theory and application of the life sciences was weighted 41.5% while the knowledge base in the behavioural and life sciences as well as nursing research were jointly weighted 9.8%. The implication of this finding for courses designed to prepare teachers of nursing is serious. In particular, the lack of a knowledge base in the life sciences would seem to be partly attributable to the apparent lack of commitment to these aspects of nursing education at this level. It may be that course directors take a wider view of the theoretical underpinning of nursing and see courses largely designed to prepare individuals in 'how to teach' rather than 'what to

teach' and, pragmatically, are concerned with practice rather than theory.

In the case of the life sciences, however, the application of theory to practice in clinical areas is crucial to patient safety and it may be that the level of teacher preparation is a place for reinforcing this requirement for a knowledge-based practice.

Correlation between admission factors (Table 10:4) and the preparation factors (Table 10:5) was calculated. The co-efficient of correlation was found to be -0.82 which indicates a significant inverse relationship between admission factors and those considered important for the preparation of nurse tutors ($p < 0.05$). Thus it may be argued that the higher the admission qualifications required of applicants, the less attention is paid to courses in the life sciences and hence the theoretical backgrounds contributed by these sciences may be neglected in the syllabus.

The responses represented views of course staff on the role of the life sciences in nurse tutor preparation in answer to specific questions. However, an important aspect of a content-analysis of verbal materials is the extent to which these reveal a more general attitude towards the subject under investigation. To establish the degree of positive or negative attitudes of respondents to the role of the life sciences in nurse tutor preparation, nine transcripts were randomly selected and all were forwarded to independent

coders (n=18) for analysis.

As noted above, respondents were required to read an answer from the transcript and then decide whether or not it conveyed a positive or negative attitude to the life sciences. It had been noted in the pre-test for this exercise that a large number of responses could be categorised as neutral if coders were looking for specific mention of the life sciences as subjects. For this reason, coders were instructed to examine each statement (whether or not the life sciences were explicitly mentioned) and to decide, on balance, whether the respondent had a positive or negative attitude towards the subjects of the study (Appendices 9 and 10). The results are presented in Table 10:6.

Table 10:6

Comparison of Course Directors' Positive and Negative Views
on the Role of the Life Sciences in Nurse Tutor Preparation
By the Type of Courses Attended as Students (n=16)(9
transcripts)

of responses	BU	N*	TCR	BUxn/TCR	PWT%
l	45.0	18	1021	0.793	79.3
ve	40.9	18	1021	0.721	72.1
ve	12.9	18	1021	0.227	22.7
ded	5.3	18	1021	0.058	5.8

er of independent coders - combination of codings are shown

The results show that course staff were positive in their views on the role of the life sciences in nurse tutor preparation. The 72.1% weighting is indicative of the

emphasis which course staff placed on the contribution of these sciences to nurse tutor preparation. As noted above, eight of the course directors had attended courses which included a substantial life sciences component in the syllabus. It can be argued therefore that though constrained by the nature of the syllabus which excluded the formal input of these subjects, they themselves considered their contribution important to the preparation of nurse tutors.

In order to establish the reliability of the coding above, the data was subjected to another measure of objective analysis i.e. the inter-coder agreement on the coding of the randomly selected transcripts. This involved the analysis of the transcripts by two independent coders for positive and negative responses as shown in Table 10:7

Table 10:7

Views of Course Directors on the Role of the Life Sciences
in Nursing and the Preparation of Nurse Tutors: Inter-coder
Agreement on Positive Responses in Transcripts (n=2)

Transcript	Coder	coded +ve*	coded -ve*	coded +ve	Inter-coder agreement +ve
g letter	n	%	%	%	%
A	1	80.4	13.0	6.5	100.0
	2	80.4	13.0	6.5	
B	1	58.6	6.8	34.5	100.0
	2	53.6	6.8	34.5	
C	1	63.2	31.8	-	99.8
	2	63.1	27.2	4.5	
D	1	37.0	41.3	8.6	93.6
	2	34.7	45.6	4.3	
E	1	73.5	21.0	-	91.0
	2	71.5	14.2	14.2	
F	1	25.0	63.3	-	88.0
	2	22.0	53.0	11.7	
G	1	41.6	48.0	8.3	85.0
	2	35.4	62.5	2.8	
H	1	53.4	16.2	30.2	56.5
	2	20.2	60.5	6.9	
I	1	32.1	35.7	30.3	27.7
	2	3.9	76.7	8.9	

The results show an inter-coder agreement in seven of the nine transcripts coded i.e. 78%. This degree of agreement on the coding is important for determining the reliability of the coding system. In five of the nine transcripts, inter-coder agreement was over 90% for positive responses. Although interpretation of these results must be treated with caution given that only two coders were used, they do present a more objective result than would have been obtained if the researcher had carried out the exercise. Moreover, the mean of the responses coded positive was 48.6% of the answers compared with 35.4% for the negative answers. Hence it can be argued that the general view of course staff was strongly positive towards the life sciences.

10.8 Conclusions

In the light of the findings, the research questions can be answered as follows:

1. As far as the life sciences dealt with in this study are concerned, the evidence indicates that nurse tutor preparation concerns itself primarily with preparation of tutors who are able to use knowledge already acquired in the teaching of the life sciences. For this reason, all one-year courses demonstrably concentrate on methods of teaching only while the two-year full-time course maintain a mix of the 'what to teach' and 'how to teach it' philosophy. The evidence above suggests that course directors and staff involved in the preparation of nurse tutors are aware of the limitation of this approach but in professional and educational terms, the method is seen as the most effective way of producing a large number of tutors over a short period. As we have seen, the disadvantages are of several types of which two will be considered here. The first is the danger of expecting nurse tutor students to teach effectively what they are not prepared for at all adequately, as evidenced in their survey (Chapter IX). The reliance on the old Diploma in Nursing Part A was perhaps overdone, in that standards of preparation for the qualification varied so widely and the level of knowledge of the life sciences attained was so unreliable that the failure rate became a matter of concern to nurse educators (Watson 1976). The University of London replaced the entire course with a new syllabus which was introduced in 1981. Although it is too early to comment on the adequacy of the new course for the

purposes of preparing aspirants to nurse tutor courses, it is clear that the former Part A of the Diploma was inadequate in what appears to have been its concentration on physiology arguably to the virtual exclusion of pharmacology, microbiology and straightforward anatomy.

The second disadvantage is the emphasis on classroom rather than ward-based teaching which makes application of theory to practice often difficult to achieve in the teaching of nursing although this can be remedied to some extent by such methods as simulations and critical incident techniques. The situation of non-practising teachers is one that has serious implications for nursing, particularly in the application of theoretical knowledge of the life sciences to nursing practice. The evidence from this study suggests that while course directors follow institutional and professional policies which guide recruitment and the syllabus for the preparation of nurse tutors, these are, in the main, designed to meet a long-established need i.e. to prepare an adequate number of nurse tutors in the minimum possible time.

2. The views of course directors reflect a general support for the role of the life sciences in nurse tutor preparation. For teaching and using the life sciences, Table 10.3 shows that course directors considered these sciences important for the nurse tutor. However, the degree to which such a stated support is operationalised on the courses is clearly disappointing. 8 of the 10 institutions not only excluded the teaching of the life sciences from their courses, but students' lessons were not supervised with a view to advising

them on the appropriateness of their content and teaching methods. Yet in the course of the interviews, course directors repeatedly affirmed that these sciences are very important in nurse tutor preparation. It may be, therefore, that the importance attached by respondents to these subjects stem, not so much from a desire to see them developed within the programme fundamentally, but perhaps from a nostalgic reflection of their own previous preparation and also by a faith in the previous professional courses which may not be entirely justified in relation to the life sciences.

The mixed groups (i.e. those who train on methods only courses which include students from other professions who are also training to be teachers) seem to present problems to the course directors as the following example illustrates:

If you think in terms of the group as a whole, to give you the pedigree, we have 7 or 8 out of a group of 34 taking nurse tutor course. We've got hairdressers, chiropodists, electrical engineers..They come in with their body of knowledge for a one-year course or the equivalent of one-year course concerned totally with how to teach.

Thus the answer to the question on course-input determining factors appears to be that course directors saw their responsibility as helping knowledgeable professional nurses to learn how to transmit that knowledge to learners.

Evidently, the views of course directors on the question of the contribution of the life sciences to nursing education generally and the preparation of nurse tutors specifically are supportive of the need to improve the range and scope of

the contribution of these sciences in nursing education at every level. These statements need a clearer definition of the context in each case.

The survey of course directors provided an opportunity to examine some of the issues which determine the nature and purpose of nurse tutor preparation. On a number of these issues, it was clear from the interviews that a trend towards the development of a nursing knowledge base in the life sciences seems to be emerging from these courses.

In some cases, the facilities for medical liaison were not available due to the distance between the institution and a medical school. Nevertheless, even where medical participation was possible, respondents seemed unwilling to use medical staff because, as one respondent noted:

The whole philosophy is concerned with how to teach the subject with which you should already be familiar. So we don't involve the medical staff at all.

Yet, as was shown in Chapter IX, students on these courses were required to teach a wide range of medical and surgical subjects to learners, all of which depend crucially on an understanding of pathophysiology and related life sciences. Ward-based teaching would seem to overcome the obvious limitation of the classroom teaching of pathophysiology and course directors encouraged students to be involved in this during teaching practice. It should be recalled that a high proportion of students on these courses were qualified RCNTs and their commitment to clinical teaching was established.

Supervision of teaching practice was examined in the case of the first group of students (n=176). The results as shown in Table 9:26 show that specific supervision of the life sciences was not undertaken. This again reflects the general objective of these courses i.e. teacher training (but with a questionable disregard for accuracy of content). This could of course be due to a lack of expertise in these subjects by staff themselves. But the consequences may be serious, and not just where teaching itself is poor. A very good teacher may impart wrong facts in a way which will compound confusion by virtue of being well-learned (Curzon 1980; Waring 1975). Although the relationship between the colleges and schools of nursing are generally good and both share the supervision of students' teaching practice, there was evidence of a lack of co-ordination. For instance, classroom teaching was largely offered to students, whereas the supervisors would prefer a mix of classroom and ward-based teaching by students. This would also be valuable in providing opportunities for teaching in which the link between theory and practice was made explicit by giving explanations of the reasons for actions in real clinical situations, with all the attendant benefits for professional training.

Another aspect of interest is the need for research-based practice. As shown in Table 10:5, nursing research was one of two aspects which received the lowest PWT in the analysis of the interviews. Respondents were committed to the objective of a research-based approach to teaching nursing, but this

was not seen as a priority. In spite of the problems of introducing research into a 'methods only' course, respondents were conscious of the need for nursing to be research-based and one institution reported a compulsory 7-week course in research method in which projects concerned with nurse education were undertaken by students. It can be argued that since teaching is an art of the possible, the development of an "enquiry/research" approach to teaching and learning is of central importance in teacher education - certainly at this level - and that 'methods only' courses have an important responsibility in this area at least.

The second research question was based on the contribution of the life sciences to nursing generally and more specifically to nurse tutor preparation. Because this is the major concern of this study, the responses were of particular interest. The evidence suggests that while course directors were fully aware of the crucial importance of these subjects in nursing education, they seemed convinced that previous qualification of applicants would suffice for any formal inclusion in their own courses. The dilemma appears to be how to provide sufficient preparation in these sciences for prospective nurse teachers while maintaining a shortened course of preparation over one year. Thus the results of the interviews with course directors have underlined the urgent need for a comprehensive review of the syllabus for nursing education generally and, within that, of the preparation of those who can teach nursing from a strong knowledge base in the life and other sciences.

The survey of opinions of course directors and other staff was important in providing the final link in this chain of investigations on the role of the life sciences in nurse education. The theoretical framework for this study (Chapter V) is based on the concept of a hierarchy of complexity and use of the life sciences in the carrying out of nursing tasks. Throughout the stages of the exploratory, preliminary and nurse tutor students' surveys, it was sought to highlight some of the issues which appear to hinder development in the teaching and learning of the life sciences in nursing. But whatever changes result from the findings of these studies, what happens at the level of nurse tutor preparation may well hold the key to satisfactory curriculum development in this area.

CHAPTER ELEVEN

PART IV

THE LIFE SCIENCES IN NURSING EDUCATION

CHAPTER XI

PERCEPTIONS AT FOUR LEVELS

11.1 Perceptions at three levels

11.2 Limitations of the Study

11.3 Implications of the Findings

11.4 A bionursing model for teaching the life sciences in
nurse education

CHAPTER XI

THE LIFE SCIENCES IN NURSING EDUCATION: PERCEPTIONS AT FOUR LEVELS

11.1 Perceptions at three levels

 The empirical work described in this study suggests that, at all three levels (learners, nurse tutor students and course directors):-

1. There is considerable agreement in the literature reviewed (Chapters II-V) on the importance of the life sciences to the practising nurse demonstrating professional competence and delivering high quality care - whatever the yardstick used to measure 'quality.'. The role of the life sciences in professional development is, however, less clear, though there appears to be a general agreement that life sciences knowledge provides some of the reasons for actions in the performance of nursing tasks. This is, however, a very general statement whose implications (though acknowledged as argued in this thesis), do not seem to have informed course provision except in the most general way. The theory/practice link emerged from this study as being ill-defined and largely implicit in all areas of training. Thus it may be argued that the knowledge input remains theoretical, sterile and difficult, 'out there' rather than the *raison d'être* for nursing care. The majority of presently available textbooks in the life sciences reinforce this problem (Akinsanya, 1984).

2. The discussion presented in Chapter V points to an emerging consensus about the desirability of a nursing model for nurse education, centred upon the concept of 'care', which might comprise:

i) routine tasks involving skills and techniques rooted in the life sciences of anatomy, physiology, pharmacology and microbiology;

ii) decision-making within the limits of professional responsibility, which is crucially dependent upon a full understanding of the reason for every action, or non-action. These, in turn, are also essentially rooted in the life sciences of anatomy, physiology, pharmacology and microbiology;

iii) interpersonal relations, which depend upon an understanding of the reasons for action, which lie mainly in the social/behavioural sciences.

There is some evidence of anxiety about the life sciences in both learners and nurse tutor students. Learners' anxiety appears to centre upon (a) what they see as the ineffectiveness of the teaching of the life sciences in their training, (b) the 'difficulty' of what they have to learn (partly because of the fact that largely experimental subjects are taught theoretically, partly because they have difficulty in seeing the relevance of the theoretical knowledge transmitted in lectures for the tasks they are being trained to perform in the wards, and partly because

they are themselves ill-prepared to meet the educational challenges of these subjects in nurse education). It is particularly important to note that learners today are better educated and better able to cope with the theoretical aspects of their work and that they might also become frustrated by a stultifying exposure to lectures with little explicit relevance, taught by teachers with little demonstrable confidence in their ability to handle that relevance adequately because of their own perceived (and sometimes real) lack of understanding.

The difficulty perceived by learners at all stages of training in the study of the life sciences constituted an important finding. The performance of a wide range of nursing procedures was perceived as dependent upon a knowledge of the life sciences and, in particular, life-threatening situations for the patient were perceived as those in which a lack of knowledge of the appropriate life science in the nurse could be dangerous for the patient (e.g. care of the unconscious patient, and procedures which may involve invasion of the physical body space).

It is important to note, however, that understanding of the reasons for nursing action i.e. of the appropriate knowledge base, was perceived as being equally important, although learners' perceptions were perhaps coloured by their own immediate experiences on the wards. It would seem, however, that the relationships between the theoretical underpinning of nursing actions, and the realities of the practical

application of this knowledge in clinical situations (in situations for which they will be individually responsible) remains an area of considerable uncertainty and a major source of learner anxiety.

Nurse tutor students also felt concerned about their own preparation in these sciences, especially in relation to their ability to teach them to learners (only 30% of the respondents felt adequately prepared to teach them). This concern is likely to be exacerbated when confronting academically able learners with solid achievements in physics, chemistry and biology at 'A' level.

The main areas of concern (causes of anxiety among nurse tutor students) are related to:

i) Difficulty in simplifying biological facts when teaching learners. This sort of difficulty often reflects inadequate understanding of the subject-matter by the teacher, whose examination success in this area may well have rested upon knowledge (i.e. rote memorisation) rather than understanding. This problem raises questions about the extent to which the Diploma in Nursing increases understanding of the life sciences rather than merely adding facts, and suggests that this is a potentially fruitful area for research.

ii) The shortage of appropriate books and other teaching materials with a nursing orientation.

iii) The use of a medical model, in the absence of

appropriate concrete experiences (experimentation in laboratory-based courses) leads to the already severe teaching difficulties experienced by nurse tutor students, few of whom have experienced an experimental approach at any point in their training.

iv) In the past, responsibility for teaching the life sciences to learners was shared with medical staff. The demands on the nurse tutors' theoretical knowledge were therefore less wide-ranging. Nurse tutor students in this study had been expected to teach across subjects to learners at all stages of training, and to cover virtually all medical and surgical specialities. It is significant that fewer than half of the nurse tutor students found their preparation in the life sciences sufficient to enable them to cope with the teaching demands made upon them. The anxiety generated by such a sense of inadequacy may well be transmitted to learners, thus increasing their existing anxieties. It is in this context that the desire for specialisation amongst respondents would seem a desirable thing for their teaching competence.

v) The burden does not appear to be any easier because of the absence of any distinctive nursing approach to learning and teaching the life sciences, which would make clear the relevance of the theoretical input in schools to the practice on the wards. Indeed, the evidence in this study suggests that it is at the level of the theory/practice link that nurse tutors experience the greatest anxiety. The apparent gulf between what is taught in the school and the reality of practical demands on learners' knowledge on the wards,

emerged with renewed emphasis in this study.

Students on one-year courses expressed concern about their lack of access to patients on teaching practice, clearly an important means of linking theory with practice. Although course directors reported the use of a variety of techniques such as simulations in training nurse tutors, the effective use of these techniques is likely to be dependent upon the quality of the users' knowledge base. This applies both to nurse tutor training and to their use of these techniques in their own teaching as a supplement to, or a substitute for, teaching on the wards.

These are important findings with many implications for future research and for curriculum development. They offer some contrast, too, to course directors' perceptions. While the latter perceive the life sciences as crucial in the preparation of nurse tutors, the reality of their official concern is the preparation of an adequate number of teachers for the needs of the profession, and one-year methods only courses seem the obvious solution. As a result, they have to rely on an assumption that an appropriate level of knowledge and understanding is already available to nurse tutor students on entry to training, by virtue of their previous success in the Diploma in Nursing course. Quite apart from the fact that at present a substantial number of entrants to training courses have not completed the Diploma course, and that life sciences input in the Diploma course has been

primarily concerned with patho-physiology in the past, the evidence from the nurse tutor students survey suggests that this reliance may be misplaced.

Interestingly, course directors perceive a shift in the knowledge base of nursing from the life to the behavioural sciences. Yet there appears to be no desire to reverse such a shift in spite of the admitted consequences of inadequate tuition in the life sciences for learners. The shift was in fact welcomed by course directors as a necessary redress of an imbalance between the biological and behavioural sciences in nursing education. At the same time, the evidence suggests that, implicit in the course planning, is a desire to prepare tutors who are able to teach the life sciences. Indeed course directors were vehement on the important role of these subjects in nursing education and saw the role of nurse tutors in their transmission as pivotal to safe practice. Yet ideal and reality appear poles apart, and institutional and professional demands are evidently met pragmatically. When the two conflict, compromise seems inevitable, with the result that the requirement of the nursing profession for tutors knowledgeable in the life sciences and able to transmit such knowledge in classroom and clinical areas, though recognised, appears to be subservient to institutional policy. This dilemma is partially obscured by the assumption that nurse tutor students already possess that knowledge. Even if this were the case, it is the argument of this thesis that the course preparing nurse tutors should ensure that the knowledge transmitted and, in particular, an understanding of

its application in practice, is both accurate and relevant, reflecting learners' needs in relation to professional preparation and practice.

As we have seen, this situation is not helped by the fact that teaching practice supervision is often carried out by College staff without qualifications in the biological/life sciences who could clearly provide neither help with content in lesson preparation, nor an assessment of the accuracy of the lesson content, however competent to judge teaching ability they may be. It seems possible that more benefits would accrue from the closer involvement of schools of nursing in teaching practice. It is the specificity of the content of teaching that also calls into question the tendency to treat nurse tutor students as one among several professional groups within a methods-only course, a tendency that should be re-examined.

11.2 Limitations of the study

Clearly, much of what was attempted in this study was in the nature of an exploration as the writer studied the literature and, within the context of a developing theoretical framework (Chapter V), sought a profitable starting point for the main empirical study. As experience and ideas evolved during the exploratory and preliminary studies, it became clear that the preparation of nurse tutors probably lies at the very centre of any attempt to establish a fully professional curriculum in nurse education, and so the work on nurse tutor courses came to form the main focus of the research. Because of the

largely exploratory nature of the whole exercise, the empirical work has been regarded as a necessary prelude to any more wide-scale study, with instruments whose validity and reliability can be established, making replication possible in a wider context. Clearly, then, the study suffered some methodological limitations in that the tools were designed almost from scratch. Thus generalizations can only be tentative and cautious. Even so, it can be argued that the findings raise some important questions which need to be taken seriously and addressed by nurse educators at every level.

11.3 Implications of the Findings

These can be considered under three broad headings - education, service and research.

a) Nursing Education

This study would seem to suggest that the past approach to reforms in nursing education has been less than beneficial in terms of fundamental changes to the nursing course in response to an evolving professional consciousness. As the various official and professional reports discussed in Chapter IV indicate, the tendency to bring together a distinguished group with a secretary and a chairman (invariably from the medical profession and generally outside the nursing profession), with broad and diffuse terms of reference, has tended to lump together problems and issues which might be best examined separately. This thesis has argued that an appropriate examination of the contributions of the life sciences to nursing education will provide a more

concentrated and illuminating exercise, with regard to making possible (i) the identification of a body of knowledge of direct relevance to nursing practice, (ii) clarification of the relation of this body of knowledge to practice, (iii) ways of providing for both (i) and (ii) in lecture room and clinical situations.

The preparation of nurse tutors, in particular, should be examined with regard to particular areas of their preparation such as the behavioural and life sciences as defined in this thesis. At the most fundamental level, a close review of the content of the Diploma in Nursing courses would seem to be necessary (as the new syllabus becomes widely implemented), so that it provides not only more advanced knowledge, but (i) covers a wider field, and ensures that basic knowledge is reinforced, and (ii) ensures that the application of this knowledge to nursing practice is clearly understood. The use of such educational approaches as simulation, critical incident techniques, as well as laboratory experiences, could be important here, and warrants more research.

If methods-only courses are to be the rule in nurse tutor preparation, a redefined Diploma in Nursing might provide an essential foundation of knowledge and understanding necessary not only for successful teaching, but for learning to handle effectively in their own teaching the educational techniques mentioned above. Efficient and effective use of simulations and practice might go some way towards alleviating the problem of lack of clinical contact, although this may be at

a loss to student and learners alike. Research here would also be profitable. Ways of helping students to cope with the current excessive demands of a life sciences knowledge during teaching practice and of ensuring quality in terms of lesson content, represent an urgent priority.

Clearly, much might be learnt from mainstream research in education, not only in relation to tutor training, but in relation to classroom-based curriculum development and research, and to evaluation (see, for example, Kelly 1971; Stenhouse 1975). Overall, it would seem that the level of nurse tutor preparation is where the most fundamental and immediate changes need to be made in order to overcome the apparent frustration, anxiety and disillusionment found in this study.

b) Nursing Practice

The division in nursing between theory and practice is evident from the findings of this study. Nursing practice, like nursing education, has perhaps been affected by what appears to be a failure to achieve organised, systematic, rigorous, periodical examination of its overall impact on the care of patients. For, in spite of the activities of the RCN and the statutory bodies, the literature reviewed in this thesis indicates a lack of co-ordinated examination of the demands made on practising nurses and of the knowledge and understanding they require for professional competence.

A thorough-going attempt to delineate a rationale for nursing

education, as a first step towards review and revision of nursing practice would therefore seem to be a very high priority, calling for a national working party composed of nurse educators, researchers and nurses in clinical practice. At its core, such a rationale would be concerned with the needs of the nursing profession, and the meeting of these needs in nursing education. From this point on, courses developed will need to be intimately related with research and evaluation, in the gradual evolution of a professional education for learners and their teachers.

c) Nursing Research

As noted above, research in nursing education and practice is increasing in the UK and researchers have made notable contributions to improved patient care in recent years. As we have seen, the RCN/DHSS Study of Nursing Care Project has been at the centre of this developing research-based nursing in the UK. But research in nurse education per se needs to be seen to be grappling with issues that clearly concern learners, who as reported in Chapters VI and VIII, appear to be confused and anxious about the link between theory and practice. Yet the absence of research commitment at the level of statutory control (the former GNC disbanded its Research Unit) could lead to a situation in which the professional competence of learners and registered nurses may suffer from a lack of direct involvement in research and development by the UKCC and ENB.

This study arose from the researcher's long-term observation

that nursing, dependent as it has been on a largely medically-orientated practice, has probably missed several opportunities to develop its own knowledge base, particularly in the life sciences. In the intervening two decades since this concern was first experienced, much has changed in nursing education. The approach in this study, which looked at the triangle of LEARNERS-TUTORS-COURSE DIRECTORS perspectives, exposed a number of problems with considerable curricula implications in relation to the learning, teaching and application of the life sciences in nursing education. (It is worth noting that the issues may be more acute for the life than for the behavioural sciences. The latter inform nurses about people and their behaviour under varying circumstances including stressful situations. It could be argued that the life sciences, on the other hand, mainly inform nursing practice in so far as they relate to the specific tasks involved in nursing care).

It is significant that problems of access to field materials were not experienced during this study. All participants were interested, enthusiastic and supportive, and this augurs well for nursing as a research-based profession (Smith 1979).

11.4 A bionursing model for teaching the life sciences in nurse education

In each of the participating schools of nursing, attempts were made to test the theoretical model for this study at two levels:

(a) A conceptual level, in which it was compared with the biomedical model used in the study of medicine. It was argued that nursing needs to have direct access to knowledge derived from the life sciences, but which is specifically orientated towards the needs of the professional nurse, in place of the medical-orientation of past (and much current) teaching. Learners were reminded of the current emphasis on a 'nursing model' and the nursing process was introduced as a supportive evidence for the development of a direct link between theory and practice. As reported in Chapter VIII, the term 'bionursing' was introduced to learners the majority of who saw it as providing a useful link between theory and practice.

(b) Establishing a link between the life sciences and nursing activities could, at the practical level, provide opportunities for nurses to initiate certain specified procedures which do not depend on specific and repeated medical sanction. These nursing-initiated activities would depend on proper understanding of the appropriate life science knowledge, and enable the nurse to provide physical and emotional care. By delineating nursing activities in terms of operational, specific, contextual and professional levels, learners were enabled to identify those procedures to which a 'bionursing' link could be applied. As we saw from Figure 8:19 (210), many such procedures demand microbiological knowledge, which respondents reported as being difficult to learn and understand, and nurse tutor students apparently do

not consider sufficiently important to include in the list of their own learning priorities. The implications of this finding are educationally important and professionally serious for learners.

The apparent gulf between what is taught in schools and the reality of practical demands on learners' knowledge on the wards emerged with considerable force in the present study, as did the implications for nurse tutor preparation.

The increasing use of the nursing model, the introduction of the nursing process and the evidence of a gradual establishment of a base of nursing knowledge suggests the need for a new approach to curriculum development in the life sciences. As Bendall (1973) suggested:

The first and most pressing need is for research into what should actually go into the nursing training syllabus in terms of what happens in the ward situation.

This thesis has argued that the starting point for analysis and for course development might well lie in an analysis of tasks, which, it is suggested, form a hierarchy in terms of the complexity of the demands made on the nurse if she is to understand them. This task hierarchy could then form the basis of an analysis of the underlying life science knowledge and of the way it is applied in performing the tasks. This would be a formidable undertaking, yet a new approach to the curriculum in the life sciences area seems imperative in the light of recent research findings.

Whatever conceptions qualified nurses may have of it, professional

onomy depends in part, on what is taught, how it is learnt, the clarity of the learners' understanding and the judgements involved in its application in practice. All these issues can be examined by the use of the model and, at every stage of course planning in the life sciences, it would seem that the model provides a means of delineating essential information for inclusion in the syllabus. Though as yet untested, it seems possible that the use of the model will also be helpful in ensuring transfer, both vertical (as between simple and complex concepts) and lateral (in application in practice). For, in the final analysis, what has been argued is not that the life sciences are important in nurse tutor preparation, but that in principle, they cannot be overtly excluded from their courses without serious consequences for their later teaching responsibilities. The discussion in this thesis, therefore, no more demands an exhaustive defence of the life sciences in nursing education than it creates an urgent need for an appraisal of their contribution to the theory and practice of nursing. It would be hard, in the light of the evidence presented above, to dispute the views of learners and nurse tutor students that the teaching and learning of the life sciences currently present them with difficult educational problems. It would seem that course directors have an ambivalent attitude towards the inclusion of the life sciences in their courses. Indeed, while they vehemently assert their relevance and importance to the preparation of nurse tutors, they nevertheless push the responsibility for ensuring their appropriate input to pre-tutor courses. However, there are increasing grounds for questioning such an approach not least of which is the evident anxiety of learners and nurse tutors whose professional practice depend, for the most part, on a sound grasp of knowledge derived from these sciences.

certainly, the analytical problems are considerable, because the current nursing syllabus does not appear to encourage nurse educators to approach the teaching of the life sciences within a framework in which concepts and terms from these subjects are seen first and foremost as legitimate vocabulary of nursing rather than ideas borrowed from medicine. A 'bionursing' link, because it may encourage the nurse to look directly at the roots, rather than the branches of the life sciences and their application to nursing care, could lead to a better understanding of the reasons for their application, greater professional competence and enhanced patient care and welfare.

REFERENCES

R E F E R E N C E S

ABDEL-AL H (1974):

An approach to Nurse Education. *Nursing Mirror*, 139, 4, 68-71

ABDEL-AL H (1975):

Relating education to practice within a nursing context. (An unpublished PhD Thesis), University of Edinburgh

ABEL-SMITH (1960):

A History of the Nursing Profession. Heinemann Educational Books Ltd, London

ADAMS W E & TAYLOR D W (Eds) (1974):

Gowland and Cairney's Anatomy and Physiology for Nurses. N M Peryer Limited, Christchurch, New Zealand

ADELOYE A (1976):

The Nurse and the Operating Theatre - Past, Present and Future. *The Nigerian Nurse*, 8,3, 6-10

AKINSANYA J A (1980):

Human Biology: a textbook for nurses and allied professions. Macmillan Press Limited, London and Basingstoke 248pp

AKINSANYA J A (1980):

Microbiology, Health and Hygiene. Macmillan Press Limited, London and Basingstoke 112pp

AKINSANYA J A & HAYWARD J C (1980):

The biological sciences in nursing education: contribution of bionursing. *Nursing Times*, 76, 10, 427-432

AKINSANYA J A (1982):

Examining learners in nursing: problems of theory and practice. Nurse Education Today, 2, 1, 19-21

AKINSANYA J A & HAYWARD J C (1982):

Curriculum development in nursing education: preparing the teachers. (In Proceedings of the Royal College of Nursing Research Society XXIII Annual Conference, University of Durham), Harrison et al (Editors), RCN, London

AKINSANYA J A (1984):

The uses of theories in nursing. Nursing Times, 80, 14, Occasional Papers, July 11, 59-60

AKINSANYA J A (1984):

Learning about nursing research. Nursing Times, 80, 16, Occasional Papers, August 29, 59-61

AKINSANYA J A (1984):

Development of a nursing knowledge base in the life sciences: problems and prospects. International Journal of Nursing Studies, 21, 3, 221-227

ALEXANDER M F (1982):

Integrating theory and practice in nursing - 1. Nursing Times, Occasional Papers, 78, 17, 65-68

ALEXANDER M F (1982):

Integrating theory and practice in nursing - 2. Nursing Times, Occasional Papers, 78, 18, 69-71

ALEXANDER M F (1983):

Learning to nurse: Integrating Theory and Practice. (Studies in Nursing Series). Churchill Livingstone, Edinburgh

ALLAN P (1981):

Nurse teachers - step by step. Nursing Standard, January 10, p4

ALTSCHUL A (1979):

Commitment to nursing. Journal of Advanced Nursing, 4,2, 123-135

ANNANDALE-STEINER D (1979):

Unhappiness is the nurse who expected more. Nursing Mirror, 149,22, 34-36

ANNETT J (1971):

Task Analysis. HMSO (cited in Curzon L B (1980) Teaching in Further Education: An outline of Principles and Practice. 2nd edition), Cassell, London

ATHLONE REPORT (1939):

Ministry of Health Board of Education: Interdepartmental Committee on Nursing Services, Interim Report, HMSO, London

AUSTIN R (1977):

Sex and gender in the future of nursing - 1. Nursing Times, 73, 34, Occasional Papers, 113-116

AUSTIN R (1977):

Sex and gender in the future of nursing - 2. Nursing Times, 73, 35, Occasional Papers, 117-119

AUSUBEL D (1968):

Educational Psychology: A Cognitive View. Holt, Rinehart and Winston, New York

BALDWIN S (1983):

Nursing models in special hospitals. Journal of Advanced Nursing, 8,6, 473-476

BALES R F (1951):

Interaction Process Analysis: A Method for the Study of Small Groups. Addison-Wesley, Reading

BALL M J & HANNAH K J (1984):

Using Computers in Nursing. Reston Publishing Company Inc. Prentice-Hall, Reston, Virginia

BALME H (1937):

A criticism of nursing education. Oxford University Press, London

BALY M E (1982):

Nursing and Social Change (2nd Ed), William Heinemann Medical Books Ltd, London

BARR A (1967):

Measurement of nursing care. Publication No. 9 Operational Research Unit, Oxford Regional Hospital Board.

BEARD R M & POLE K (1971):

Content and purpose of biochemistry examinations. British Journal of Medical Education, 5, 13-21

BECKER H S (1971):

Sociological Work: Method and Substance. Allen Lane, London

BELSON W A (1967):

Tape recording: its effect on accuracy of response in survey interviews. Journal of Market Research, 4, 252-260

BENDALL E & RAYBOULD E (1969):

History of the General Nursing Council for England and Wales, 1919-1969. H K Lewis and Co, London

BENDALL E (1971):

The learning process in student nurses. Nursing Times, 67, 44, Occasional Papers, October 28 and November 4, 169-174

BENDALL E (1973):

Teach-In. Joint Board of Clinical Studies(2) Curriculum Planning.
Nursing Times, 63, 17, Occasional Papers, April 26, 65-67

BENDALL E (1975):

So you passed, Nurse? RCN, London

BENDALL E (1976):

Learning for reality. Journal of Advanced Nursing, 1, 3-9

BENDALL E (1977):

The future of British nursing education. Journal of Advanced
Nursing, 2, 171-181

BENDALL E (1973):

Education for Change. Nursing Mirror, 137,11, September 14,
p39-41

BERELSON B R & LAZARFELD P F (1948):

The analysis of communication content - preliminary draft.
(Mimeographed) Oslo, Copenhagen.

BIRCH J (1978):

Anxiety in nurse education. Unpublished PhD Thesis, University of
Newcastle-upon-Tyne

BIRCH J (1979):

The anxious learners. Nursing Mirror, 148,6,February 8, 17-22

BLISS J & OGBORN J (1977):

Students' reaction to undergraduate science. Heinemann
Educational, London

BOORE J (1978):

A Prescription for Recovery. RCN, London

BOOTHROYD W (1979):

Teaching practice supervision - a research report. British
Journal of Teacher Education, 5, 3, October, 243-249

BOSANQUET N & CLIFTON R (1973):

Briggs: The Context (1). Resources for Training. Nursing Times, 69, 19, Occasional Papers, May 10, 74-76

BOSANQUET N & CLIFTON R (1973):

Briggs: The Context (3). Nursing work: Some Impressions. Nursing Times, 69, 21 & 69, 22, Occasional Papers, May 24 & 31, 81-87

BOWMAN M (1981):

Learning to teach. Nursing Mirror, 152,20, Nursing Education Supplement, May 13, p x-xiv

BROWN R G S & STONE R W H (1973):

The Male Nurse. Occasional Papers on social administration, No. 52, Bell, London

CAPLOW T C (1956):

The dynamics of information interviewing. American Journal of Sociology, 62, 155-171

CARR W (1980):

The Gap Between Theory and Practice. Journal of Further and Higher Education, 4,1, 60-69

CARR-SAUNDERS A M (1933):

Professions: Their Organization and Place in Society. Clarendon Press, Oxford

CHAO Y M (1979):

Cognitive operations during maternal role enactment. Maternal-Child Nursing Journal, 8, 211-274

CHINN P L (1983):

Nursing Theory Development: where we have been and where we are going. (In: The Nursing Profession: A Time to Speak, Chaska N L (Ed) McGraw-Hill Book Company, London

CLARKE M (1977):

Research in Nurse Education. Nursing Times, Occasional Papers, 73, 7, February 17, 25-28

CLARKE M (1981):

Two aspects of psychology and their applications to nursing. In 'Nursing Science in Nursing Practice' (Ed: J P Smith), Butterworths, London

CLOUGH F (1981):

Priorities in Nurse Education. Royal Society of Health Journal, 101, 5, 196-199

COLLINS S (1972):

Educating the Nurse and Midwife of the Future. Nursing Times, 68, 50, December 14, 1592-1595

COPE Z (1955):

A Hundred Years of Nursing at St Mary's Hospital, Paddington. William Heinemann Medical Books Ltd, London, p 33

CORMACK F S (Ed) (1984):

The Research Process in Nursing. Blackwell Scientific Publications, London

CORNELIUS D (1977):

Watchword. The Nigerian Nurse, 9, 4, 37-38

CROW R A (1976):

A fresh look at psychology in nursing. Journal of Advanced Nursing, 1, 1, 51-62

CROW R A (1982):

Knowledge underlying nursing practice: what do we mean? Nurse Education Today, 2, 6, 8-10

COX C (1982):

'The seeds of time' - or the future of nurse education. Nurse Education Today, 2,6, 5-10

COX C (1982):

Frontiers of nursing in the 21st century: lessons from the past and present for future directions in nursing education. International Journal of Nursing Studies, 19,1, 1-9

CURZON L B (1980):

An Outline of Principles and Practice: Teaching in Further Education. Cassell, London

DAVENPORT N J (1980):

The nurse scientist - between two worlds. Nursing Outlook, 28, 1, January, 28-31

DAVIES C (1976):

Experience of dependency and control in work: the case of nurses. Journal of Advanced Nursing, 1, 273-282

DAVIES C (1977):

Continuities in the development of hospital nursing in Britain. Journal of Advanced Nursing, 2, 479-493

DAVIES C (1978):

Four events in nursing history: A new look. Nursing Times, Occasional Papers, 74,25, 65-68

DE LA CUESTA C (1983):

The nursing process: from development to implementation. Journal of Advanced Nursing, 8, 5, 365-371

DEMAREE R (1961):

Development of Training Equipment Planning Information (cited in Smith K U (1956): Cybernetic Principles of Learning and Educational Design), Holt, Rinehart and Winston, New York

DEPARTMENT OF HEALTH AND SOCIAL SECURITY (1970):

Report of the Nurse Tutor Working Party, London

DEPARTMENT OF HEALTH AND SOCIAL SECURITY (1974):

The Organisation of Nurse, Midwifery and Health Visitor Education and Training. NHS Reorganisation Circular HRC(74)11.

DICKINSON S (1982):

The nursing process and the professional status of nursing. Nursing Times, 78,16, 61-64

DODD A P(1973):

Towards an understanding of nursing. Unpublished PhD Thesis, University of London

DOWNS F S (1984):

Dig We Must (Editorial) Nursing Research, 33, 5, 254

DUNCAN A S (1979):

Curricular change in British Medical Schools. Programmed Learning and Educational Technology, 16,4, November, 272-276

DUTTON E A (1972):

Recruitment of sister-tutors in the nursing profession: a study of role-choice and its determinants. Unpublished PhD Thesis, University of London

EDNEY P (1972):

~~A~~ Systems Analysis of Training. Pitman, London

ENGLISH NATIONAL BOARD FOR NURSING, MIDWIFERY AND HEALTH VISITING (1983):

The end of the beginning. September 1980 - September 1983, ENB, London

ENGLISH NATIONAL BOARD FOR NURSING, MIDWIFERY AND HEALTH
VISITING (1984):

(Report by Fleming J (1984). Nurse teacher cutbacks will
affect patient care. Senior Nurse, 1, 7, May 16, 7

FARNISH E G S (1982):

Preparation for the role of Ward Sister (In Proceedings of
the Royal College of Nursing XXIII Annual Research Conference
- Edited, Harrison S et al), RCN, London, 157-169

FAULKNER A (1980):

Communication and the nurse. Nursing Times, Occasional
Papers, 76, 21, September 4, 93-95

FAWKES B (1969):

The Salmon teaching division: three viewpoints. GNC Views.
Nursing Times, 65, 9, February 27, 269-270

FIELDING P (1982):

An investigation of student nurses' attitudes towards old
people in hospital. Unpublished PhD Thesis, University of
Southampton

FOX D J (1976) (3rd edition):

Fundamentals of research in nursing. Appleton-Century-Crofts,
New York

FRASER E D (1969) Home Environment and the School (Scottish
Council for Research in Education Publication 43), University
of London Press, London

FRENCH K (1981):

Methodological considerations in hospital patient opinion
surveys. International Journal of Nursing Studies, 18, 7-32

FRETWELL J E (1979):

Socialisation of nurses: teaching and learning in hospital wards. Unpublished PhD Thesis, University of Warwick

FRETWELL J (1980):

An enquiry into the ward learning environment. Nursing Times, 76, 16, Occasional Paper, June 26

GAGNE R M (1970):

The Conditions of Learning. Holt, Rinehart and Winston, New York

GENERAL NURSING COUNCIL FOR ENGLAND AND WALES (1977):

Advice on contracts for Student Nurses -1. Nursing Times, 73, 20, Occasional Papers, May 19, 69-72

GENERAL NURSING COUNCIL FOR ENGLAND AND WALES (1975):

Teachers of Nursing 1 & 2, GNC, London

GENERAL NURSING COUNCIL FOR ENGLAND AND WALES (1981):

Nurse Teachers, Circular 81/15, General Nursing Council, London

GENERAL NURSING COUNCIL FOR ENGLAND AND WALES (1977):

Educational Policy 1977. General Nursing Council, London

GENERAL NURSING COUNCIL FOR ENGLAND AND WALES (1977):

Syllabus of subjects for examination for the Certificate of General Nursing

GENERAL NURSING COUNCIL FOR ENGLAND AND WALES:

(Annual Reports 1975/76; 1978/79; 1979/80 and 1980/81

GLASER B G & STRAUSS A L (1967):

The Discovery of Grounded Theory. Strategies for Qualitative Research. Weidenfeld and Nicholson, London

GODDARD H A (1963):

Work measurement as a basis for calculating nursing establishment. Leeds Regional Hosptial Board, Nuffield Provincial Hospital Trust.

GOTT M (1979):

Student nurses: introductory course preparation and work world expectations. Report of a pilot study. International Journal of Nursing Studies, 16,307-317

GOTT M (1982):

Theories of learning and the teaching of nursing. Nursing Times, Occasional Papers, 78,11, 41-44

GOTWALD W H (1972):

Anatomy and physiology made relevant. American Journal of Nursing, 72,12, 2206-2209

GREAVES F (1979):

Teaching nurses in clinical settings. Nursing Mirror (Supplement), 148,8, February 22, i-viii

GREAVES F (1982):

Innovation, change, decision-making, and the key variables in nursing curriculum implementation. International Journal of Nursing Studies,19,1, 11-19

GREEN M (1981):

Will they shoot the director of education at dawn? Nursing Mirror, 152, 20, Nursing Education Supplement, May 13, iv-vi

GROSVENOR P (1978):

Nursing in theory (1972-77:2). Nursing Times, 74,22, August 3, 85-87

HAINSWORTH M (1966):

Modern Professional Nursing. The Caxton Publishing Co Ltd, London

HALL C M (1973):

Who controls the nursing profession. The role of the professional Association. Nursing Times, 69, 23, Occasional Papers, 89-92

HALL D C (1980):

The nature of nursing and the education of the nurse. Journal of Advanced Nursing, 5, 2, 149-159

HARDY L K (1980):

Keeping up with Mrs Chase: an analysis of nursing skill-learning. Journal of Advanced Nursing, 5, 3, 321-327

HARGREAVES I (1975):

The Nursing Process: the key to individualised care. Nursing Times, Occasional Papers, 71, 35, 89-91

HAWTHORN P J (1974):

Nurse, I want my Mummy! The Study of Nursing Care, Series 2, No. 3). RCN, London

HAWTHORN P J (1974):

Measuring change in nursing practice. Journal of Advanced Nursing, 9, 3, 239-247

HAYWARD J C (1975):

Information - A Prescription Against Pain. The Study of Nursing Care, Series 2, No. 5). RCN, London

HAYWARD J C (1977):

Psychological Indicators in Nursing Research. Journal of Advanced Nursing, 2, 3, 251-259

HAYWARD J C (1981):

Into the next century. *Nursing Focus*, 2,10, 336-337

HAYWARD J C (1982):

Universities and nursing education. *Journal of Advanced Nursing*, 7,4, 371-377

HAYWARD J C & AKINSANYA J A (1982):

The role of the biological sciences in nursing education. (In *Issues in Nursing Research*, Redfern S J et al (editors)), Macmillan Press Limited, London, 57-73

HAYWARD J C (1982):

Universities and nursing education. *Nursing Care*. Series No.1, RCN, London

HAYWARD J C & LELEAN S R (1982) *Nursing Research* (In *Nursing, Midwifery & Health Visiting Since 1900*, Allan P & Jolley M (Editors), Faber and Faber, London, 196-214

HEBERLEIN T A & BAUMGARTNER R (1978):

Factors affecting response rates to mailed questionnaires. *American Social Review*, 43, 447-462

HEASMAN J F (1973):

What's in a Name? *Nursing Times*, 69, 29, July 19, p 940

HECTOR W (1973):

The Work of Mrs Bedford-Fenwick and the rise of Professional Nursing, RCN, London

HENDERSON V (1966):

The nature of nursing: a definition of its implications for practice, research and education. Collier Macmillan Publishers, London

HOLDER S (1981):

Teacher training - value for money? Nurse Education Today, 1,2, June p 2

HOLFORD B K (1981):

Requirements for nursing. Nursing Times, 77,3, January 15 p 113

HOLMES B (1972):

Nursing as a profession: a comparative approach. Nursing Times, 68,21, May 25, 655-656

HOLSTI O R (1969):

Content-analysis for the social sciences and humanities. Addison-Wesley, Reading Massachusetts

HONEY P (1976):

Face to face: a practical guide in intractive skills. Institute of Personnel Management, London

HOPE K (1967):

Elementary Statistics - a workbook. Pergamon Press Limited, London

HOUSE V & SIMS A (1976):

Teachers of nursing in the United Kingdom: a description of their attitudes. Journal of Advanced Nursing, 1, 495-507

HUGHES M J W (1979):

An evaluation of the relationship between life events and consultation patterns in general practice. Unpublished PhD Thesis, University of Birmingham.

HUME B E (1981):

Behavioural objectives in nurse education. Nursing Times, 77, 45, November 4, 2111-2112

INGRAM A G (1973):

The Laboratory in the School of Nursing. Nursing Times, 69, 26, June 28, 837-840

INMAN U (1975):

Towards a Theory of Nursing Care (Studies of Nursing Care. Series No. 2), RCN, London

INSTITUTE OF HOSPITAL ADMINISTRATORS (1965):

Platt Report on nursing education: comment of the Institute of Hospital Administrators. The Hospital, December, 629-630

JAMES D (1972):

Trends in nurse education. Nursing Times, 68, 8, Occasional Paper 29-32

JOLLEY M, DARLING V H & LEE M E (1982):

General Nursing (In: Allan P & Jolley M (Eds), Nursing, Midwifery and Health Visiting Since 1900), Faber & Faber, London

JONES T H D (1976):

Providing Relevance in Chemistry for Nursing Students. Journal of Chemical Education, 53, 9, 581-582

KELLY P J (197):

Curriculum development and curriculum mechanism (An unpublished PhD Thesis), University of London

KING I (1971) Towards a Theory of Nursing, New York, Wiley

KIM H S (1983):

The Nature of Theoretical Thinking in Nursing. Appleton-Century-Crofts, Norwalk, Connecticut

KIRKWOOD L (1979):

The clinical teacher. Nursing Times, Occasional Papers, 75, 12, 49-51

KRATZ C R (1979)(Ed):

The Nursing Process. Bailliere Tindall, London

LANCASTER A (1972):

Educating our educators. Nursing Mirror, 134, 12, March 24,
13-14

LEGGATT T (1975):

In: Professions and professionalization (Ed J A Jackson),
Cambride University Press, Cambridge, England

LELEAN S R (1973):

Ready for Report, Nurse? A Study of Nursing Communication in
Hospital Wards. Study of Nursing Care. Series 2, No.2 RCN,
London

LEY P & SPELMAN M S (1965):

Communication in an out-patient setting. British Journal of
Social and Clinical Psychology, 4, 114-116

LINDSEY G & ARONSON E (Editors)(1968):

The handbook of social psychology. Volume 2: Research
Methods. Addison-Wesley, Reading, Massachussetts.

LONG P (1976):

Judging and reporting on student nurse clinical performance:
some problems for the ward sister. International Journal of
Nursing Studies, 13, 2, 115-121

LYNAUGH J E & BATES B (1973):

The two Languages of Nursing and Medicine. American Journal
of Medicine, 73, 1, January, 66-69

MAANEN H M T (1979):

Perspectives and problems on quality of nursing care: an overview of contributions from North America and recent developments in Europe. *Journal of Advanced Nursing*, 4, 4, 377-389

MACGUIRE J M (1969):

Threshold to nursing. Occasional Paper on Social Administration. No. 30 Bell, London

MACLEOD CLARK J & HOCKEY L (1979):

Research for Nursing. A Guide for the Enquiring Nurse. H M + M Publishers, London

MACLEOD CLARK J (1982):

Nurse-Patient Verbal Interaction. An Analysis of Recorded Conversations in Selected Surgical Wards. Unpublished PhD Thesis, University of London

MAGGS C (1978):

Towards a social history of nursing. *Nursing Times*, Occasional Papers, 74, 14, May 25, 57-58

MAGGS C (1981):

The register of nurses in the Scottish Poor Law Service 1885-1919. *Nursing Times*, 77, 48, Occasional Paper, 129-132

MARTIN L (1984):

The clinical teacher - a second class citizen in nursing? Paper presented at the International Conference of the RCN Research Society XXV Annual Conference, London

MATHIESON S (1974):

Students' views on clinical teaching. *Nursing Times*, 70, 24, June 13, 294-295

MCCARTHY W H (1972):

Egoistical Specialistis and nursing students. Nursing Times, 68, 3, January 20, 41-44

MCFARLANE J (1977):

Developing a theory of nursing: the relation of theory to practice, education and research. Journal of Advanced Nursing, 2, 261-270.

MCFARLANE J (1982):

Essays on nursing. Project Paper Number RC2 March. Working Paper for the Royal Commission on the NHS, 43

MCFARLANE J K & CASTLEDINE G (1982):

A Guide to The Practice of Nursing - Using the Nursing Process. The CV Mosby Company, London

MELIA K M (1982):

'Tell it as it is' - qualitative methodology and nursing research: understanding the student nurse's world. Journal of Advanced Nursing, 7, 4, 327-336

MILLER P (1975):

Clinical knowledge: a needed curriculum emphasis. Nursing Outlook, 23, 4, 222-224

MOORES B (1979):

The cost and effectiveness of nurse education - 1. Nursing Times, 75,16, 65-68

MOORES B (1979):

The cost and effectiveness of nurse education - 2. Nursing Times, 75,17, 71-72

MOORES B & MOULT A (1979):

Patterns of nurse activity. Journal of Advanced Nursing, 4, 137-149

MOSER C A & KALTON G (1971):

Survey methods in social investigations (2nd Edition).
Heinemann Educational Books, London

MULLIGAN B (1972):

How Many Nurses Equal Enough? Nursing Times, 68,15,428-430

MURRAY J A (1973):

How to make microbiology interesting for students. The
Canadian Nurse, July, 37-38

MURRAY L (1977):

The two-plus-one scheme: has it been successful? Nursing
Times, 73, 6, Occasional Paper, February 10, 21-24

NIE M H, HALL C H, JENKINS, J G, STEINBRENNER K & BRENT D H
(1975):

Statistical Package for the Social Sciences (2nd Ed).
McGraw-Hill, Book Company, New York

NIGHTINGALE F (1859):

Notes on nursing: what it is and what it is not. cited by
SKEET, M (1980), Notes on Nursing: The Science and the Art.
Churchill Livingstone, Edinburgh

NOLAN R J (1973):

The development of teaching methods in human biology within
nurse training schools. An Unpublished MEd Thesis, University
of Manchester

NURSING MIRROR (1980):

Wanted 800 more teachers. A report (by Morris, P) on the
shortage of nurse tutors. Nursing Mirror, 150, 4, January 24,
p 6

NURSING MIRROR (1981) Editorial - Nurse teachers' 30 years'
war. Nursing Mirror, 152, 2, January 8, p 3

NURSES ACTS (1943; 1949; 1957):

HMSO, London

NURSES, MIDWIVES AND HEALTH VISITORS ACT (1979):

HMSO, London

OGIER M E (1980):

A study of the leadership style and verbal interactions of ward sisters with nurse learners. Unpublished PhD Thesis, University of London.

OGIER M E (1981):

Ward sisters and their influence upon nurse learners. Nursing Times, Occasional Papers, 77,11, 41-42

OPPENHEIM A N (1966):

Questionnaire Design and Attitude Measurement. Heinemann Educational Books, London

OREM D E (1980):

Nursing: concepts of practice. McGraw-Hill, New York

ORTON H D (1981):

Ward learning climate and student nurse response. Nursing Times, Occasional Papers, 77,17, 65-68

OWEN G M (1977):

Curriculum integration in nursing education: a concept or a way of life? A study of six courses integrating basic nursing education and health visiting in a single course. Journal of Advanced Nursing, 2,5, 443-460

PARKES K R (1980):

Occupational stress among student nurses - 1. A comparison of medical and surgical wards. Nursing Times, Occasional Papers, 76, 25, 113-116

PARKES K R (1980):

Occupational stress among student nurses - 1. A comparison of medical and surgical wards. Nursing Times, Occasional Papers, 76, 25, 113-116

PARKES K R (1980):

Occupational stress among student nurses - 2. A comparison of male and female wards. Nursing Times, Occasional Papers, 76, 26, 117-119

PEMBREY S E M (1979):

The Ward Sister - Key to Nursing: A Study of the Organisation of Individualised Nursing. Royal College of Nursing, London

PETERSON C J W (1983):

Overview of Issues in Nursing Education (In: The Nursing Profession: A Time to Speak. Chaska N L (Ed), McGraw-Hill Book Company, London

PHILLIPSON P A J (1982):

Letter to the Editor, Nursing Mirror, 155,4, November 4, p 36

PIRIE S (1982):

Deficiencies in basic mathematical skills among nurses: development and evaluation of methods of detection and treatment. Unpublished PhD Thesis, University of Nottingham.

POLIT D & HUNGLER B (1978):

Nursing research: principles and methods. J B Lippincott Company, Philadelphia

POMEROY W B (1963):

The reluctant respondent. Public Opinion Quarterly, 27, 287-293

PYNE R H (1982):

The General Nursing Councils. In Allan P & Jolley M (Eds) Nursing, Midwifery and Health Visiting Since 1900. Faber and Faber

RAPHAEL W (1973):

Patients and their hospitals: a survey of patients' views of life in General Hospitals. King Edward's Hospital Fund for London, London

REPORT OF THE WORKING PARTY ON THE RECRUITMENT AND TRAINING OF NURSES (1947):

HMSO, London

REPORT OF THE ROYAL COMMISSION ON THE NATIONAL HEALTH SERVICE (Merrison Report)(1979):

Cmnd 7615. HMSO, London

REPORT OF THE COMMITTEE ON SENIOR NURSING STAFF STRUCTURE (Salmon Report)(1966):HMSO, London

REPORT OF THE COMMITTEE ON NURSING (Briggs Report) (1972):

Cmnd 5115, HMSO, London

REPORT OF THE NURSING RECONSTRUCTION COMMITTEE (Chairman: Lord Horder) (1942):

Section I: The Assistant Nurse. Royal College of Nursing, London
RHYS-HEARN C (1979):

Comparison of Rhys-Hearn method of determining nursing staff requirements with the Aberdeen formula. International Journal of Nursing Studies, 16, 95-103

ROGERS M (1970):

Introduction to the theoretical basis for nursing. F A Davis Company, Philadelphia

ROPER N (1976):

A model for nursing and nursology. Journal of Advanced Nursing,1, 219-227

ROPER N (1976):

Clinical Experience in Nurse Education. A Survey of the Available Nursing Experience for General Student Nurses in a School of Nursing in Scotland, Churchill Livingstone, Edinburgh and London

ROPER N, LOGAN W W & TIERNEY A J (1980) Elements of Nursing. Churchill Livingstone, Edinburgh

ROPER N, LOGAN W W & TIERNEY A J (1981):

Learning to use the Process of Nursing. Churchill Livingstone, Edinburgh

ROY C (1980):

In: Conceptual models for nursing practice (Edited by Reihl J P & Roy C), Appleton-Century-Crofts

ROYAL COLLEGE OF NURSING OF THE UNITED KINGDOM (1964):

A Reform of Nursing Education (The Platt Report) Rcn, London

ROYAL COLLEGE OF NURSING OF THE UNITED KINGDOM (1971):

Evidence to the Committee on Nursing, Rcn, London, 20

ROYAL COLLEGE OF NURSING OF THE UNITED KINGDOM (1981):

"To teach or not to Teach" Report of a Working Party on Teachers of Nurses, RCN, London

ROYAL COLLEGE OF NURSING (1983):

The Preparation and Education of Teachers of Nursing - Report of the RCN Working Pary, Rcn, London, 6-7

SCHROCK R A (1975):

Nurse tutor students' experiences in teaching practice - 1. Nursing Times, 71, 8, Occasional Papers, February 20, 9-12

SCHROCK R A (1975):

Nurse tutor students' experiences in teaching practice - 2. Nursing Times, 71, 9, Occasional Papers, February 27, 13-15

SCOTT C (1961):

Research on mail surveys. Journal Royal Statistical Society. Series A, 124, 143-192

SCOTT-WRIGHT M (1968):

Student nurses in Scotland: characteristics of success and failure. Scottish Health Service Studies No. 7 Edinburgh, Scottish Home and Health Department, Edinburgh

SHEAHAN J (1981):

Developing teaching skills. *Nursing Focus*, 3, 3, 543-547

SHEAHAN J (1980):

Educating teachers of nursing: a survey of the opinions of students. *Journal of Advanced Nursing*, 5, 45-55

SIMS A (1976):

Teachers of nursing in the United Kingdom: some characteristics of teachers and their jobs. *Journal of Advanced Nursing*, 1, 377-389

SINGH A (1971):

Norms for first-year student nurses: general intelligence and personality. *Nursing Times*, 67, 30, Occasional Papers, July 29, 117-119

SKIPPER J K & ELLISON M D (1966):

Personal contact as a technique for increasing questionnaire returns for hospitalized patients after discharge. *Journal of Health and Human Behaviour*, 7, 211-214

SMITH J P (1979):

Is the nursing profession really research-based? *Journal of Advanced Nursing*, 4, 5, 319-326

STACEY M (1979):

Methods of Social Research. Pergamon Press, Oxford

STARCK P (1984):

Realism in Nursing Curricula. *Nursing Outlook*, 32, 4, July/August

STONE P J, DUNPHY D C, SMITH M S & OGILVIE D M (1966):

The General Enquirer: A Computer Approach to Content Analysis. MIT Press, Cambridge, Massachusetts

STRAW J A (1981):

Entrance to nurse training by 'O' level and the GNC 'E' test.
Nursing Times, 77, 29 Occasional Papers, October 21, 113-116

TEACHER EDUCATION AND TRAINING (1972):

The James Report (Chairman: Lord James of Rusholme), Department
of Education and Science, HMSO, London

THE LANCET COMMISSION ON NURSING (1932):

Final Report, Lancet, 1, 415

THE NURSES AND ENROLLED NURSES (AMENDMENT) RULES APPROVAL
INSTRUMENT (1976):

HMSO, London

THOULESS R H (1969):

Map of Educational Research, National Foundation for Educational
Research Publications Company, London

WALKER L O & AVANT K C (1983):

Strategies for theory construction in Nursing.
Appleton-Century-Crofts, Norwalk, Connecticut

WARING M (1975):

Aspects of the dynamics of Curriculum Reform in Secondary School
Science (Unpublished PhD Thesis), University of London

WATTLE L & MULLER D J (1983):

Psychology and nursing: the case for an empirical approach.
Journal of Advanced Nursing, 8, 2, 107-110

WATKINS B (1975):

Documents on Health and Social Services (1834 to the present
day) Methuen & Co, London

WATSON M W (1976):

Perspectives for nurse teachers. Nursing Times, 76, 36, Occasional
Papers, 133-135

WHITE R (1982):

The Nurses Act 1949. 1 The draft proposals. Nursing Times, Occasional Papers, 78,3, 9-12

WHITE R (1982):

The Nurses Act 1949 2. Service priorities. Nursing Times, Occasional Papers, 78,4, 13-15

WILSON-BARNETT J (1978):

Factors influencing patients' emotional reactions to hospitalization. Journal of Advanced Nursing, 3, 221-229

WILSON K J W (1975):

A Study of Biological Sciences in Relation to Nursing. Churchill Livingstone, Edinburgh & London

UNITED KINGDOM CENTRAL COUNCIL FOR NURSING, MIDWIFERY AND HEALTH VISITING (1982):

(Working Group 3) Consultation Paper 1: Education and Training - The Development of Nurse Education, January 1982, p 5

UNIVERSITY OF LONDON (Department of Extra-Mural Studies), Old Regulations for the Diploma in Nursing, September 1980

UNIVERSITY OF LONDON (1979):

General Certificate of Education Examinations syllabus.

APPENDICES

Appendix 1

DEPARTMENT OF NURSING STUDIES

Chelsea College

UNIVERSITY OF LONDON

Science Test for newly recruited Learners

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*For learners of mixed educational backgrounds, it was difficult to identify sources from which information on the basic sciences would be obtained. For this reason, it was decided that terms should be selected from areas of general knowledge, defined for

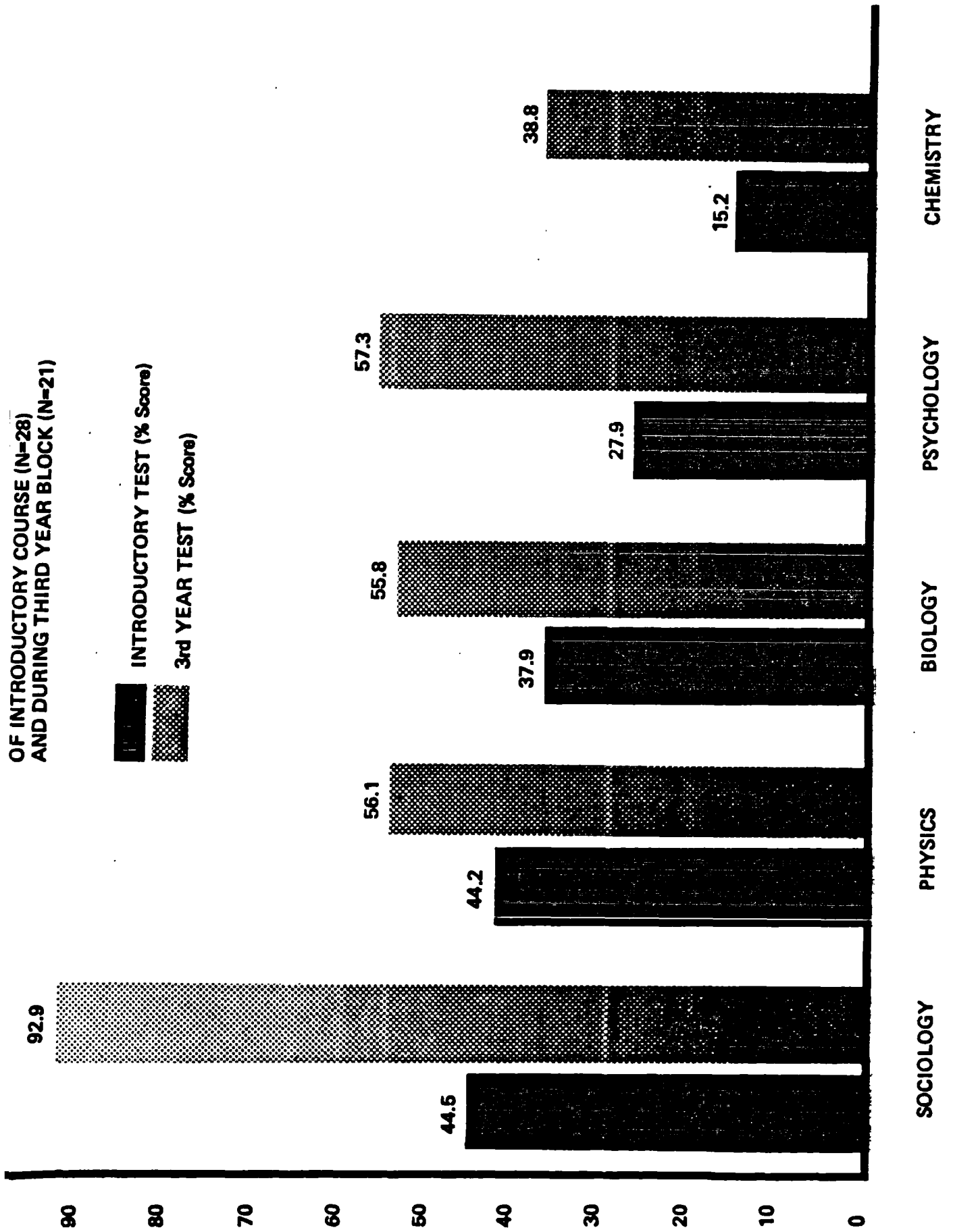
the purposes of this exploratory study as those sources open to any member of the general public with an interest in general scientific education. It was considered that the media provide information of a general kind e.g. television documentaries or specific one such as Open University programmes or 'Teach Yourself' publications. Accordingly, a number of these publications were examined in public libraries for the selection of terms to be used in the test. A list of 300 terms were randomly selected covering biology, chemistry, physics, psychology and sociology. These terms were checked against those which appeared in the GCE 'O' level examinations of the University of London and the Associated Examinations Board. The list was shown to nurse tutors in one school of nursing (n=4) to determine their suitability as terms which newly recruited learners might be expected to be familiar on entry. See, for example, Pirie (1980) on mathematical ability of learners for the use of this method of vetting by nurse tutors.

Learners were required (a) to recognise , classify/categorise each term according to its subject-matter origin e.g. biology or psychology and (b) place each term under the appropriate subject on the test paper.

Additionally, learners were asked to provide a short definition of each term. When the test was piloted, however, this proved difficult and was therefore not pursued. However, although familiarity with each term would form the first essential step for the learners, it was considered that placement of the term under a subject would involve a conscious decision based on 'knowledge' of the subject-matter source from which it was derived.

OF INTRODUCTORY COURSE (N=28)
AND DURING THIRD YEAR BLOCK (N=21)

INTRODUCTORY TEST (% Score)
3rd YEAR TEST (% Score)



**FINAL HOSPITAL AND STATE RESULTS OF
LEARNERS WHO COMPLETED THE SCIENCE TEST
OF NOVEMBER 1981 – (N=21).**

	Reference Number of question asked in the Hospital Final Exam (HFE)										OBJ Test	Final Result Pass Fail
	1	2	3	4	5	6	7	8	9A	9B		
HFE			D		D		D	D		D		P
SRN											55	
HFE		D			C		C	E	D			P
SRN											75	
HFE		D		D	E		E		E			F
SRN											58	
HFE				D	D		D	D		D		P
SRN											68	
HFE	E		D		D	C	D					P
SRN											64	
HFE					D	E	D	E	E			F
SRN											48	
HFE			D		E		D	D	E			F
SRN											61	
HFE			D		D	C	D		E			P
SRN											58	
HFE	D		D	D			D			E		P
SRN											68	
HFE				D	B		C	D	E			P
SRN											68	
HFE			C		D	C		D	E			P
SRN											56	
HFE	E		B	D	D		E					F
SRN											66	
HFE		D			C	C	D			C		P
SRN											56	
HFE			D			D	E	E	E			F
SRN											59	
HFE			D		D		D	D	E			P
SRN											62	
HFE	E		E		E	D	E					F
SRN											45	
HFE				D	D		C	E	E			F
SRN											69	
HFE			B		D		E	D		D		F
SRN											53	
HFE	E	D	D	D	D							P
SRN											66	
HFE			D	D	D	D				E		P
SRN											66	
HFE	D			C	D	B	C					P
SRN											77	

D = Hospital Final Examination (1981)

I = State Registered Examination (1981)

Appendix 2a

DEPARTMENT OF NURSING STUDIES

Chelsea College

UNIVERSITY OF LONDON

22 April 1980

Letter to Course Directors - Nurse Tutor Courses in England and Wales

BIOLOGICAL ASPECTS OF EXISTING NURSE TUTOR COURSES

The above study, funded by the Department of Health and Social Security is concerned with the application of biological sciences in nursing education. As a starting point, it is proposed to approach staff and students concerned with existing tutor courses in order to canvass views about the place of biological sciences in nursing curricula. From its inception, the idea has been discussed with, and welcomed by, the Education Division of the General Nursing Council for England and Wales.

I am writing, therefore, to request permission for us to contact staff and students currently involved in this course at your institution. This will primarily involve a questionnaire, but it is proposed to interview a small random sample of the respondents at a later stage. This will be carried out by myself or my research associate, Justus Akinsanya, BSc(Lond), RNT.

Procedurally, this would involve sending each student a questionnaire together with a reply-paid envelope for return. At a slightly later stage, it would be most helpful if one of us could interview a small sample of respondents. It is, of course, vital that the views of staff be known, so a questionnaire is being designed for this purpose.

We would be most grateful for your permission to carry out this small, but we believe important, study. We are very aware of the demands on busy people's time, but it would merely entail your sending us a list of staff and students so that the questionnaire can be addressed to them individually. Strict confidence will be observed, and neither individuals nor institutions will be named. The Heads of Departments concerned will receive a copy of any report produced. Because of the relatively small number of tutor courses it would be very helpful to get the views of as many staff and students as possible. I do hope, therefore, that you will feel able to participate. If queries arise as a result of this letter I shall be pleased to try and answer them by telephone or a visit to your department.

J C Hayward
Project Director

Appendix 2b

DEPARTMENT OF NURSING STUDIES

Chelsea College

UNIVERSITY OF LONDON

November 1980

Letter to Nurse Tutor Students

Dear Colleague

BIOLOGICAL ASPECTS OF EXISTING NURSE TUTOR COURSES

The enclosed questionnaire is part of a survey of nurse tutor courses. It is funded by the Department of Health and Social Security, and has the encouragement of the Education Division of the General Nursing Council for England and Wales. The aim is to investigate biological aspects of existing nurse tutor courses. It is hoped that the findings of the survey will contribute to curriculum development in nursing education.

As you know, all existing one-year nurse tutor courses are generally concerned with teaching methods rather than specific subject matter such as the biological or the behavioural sciences. It is hoped that this survey would contribute to our knowledge of the degree to which the biological sciences are used in the preparation of nurse tutor students for their teaching responsibilities to learners. The biological subjects of principal interest in this survey are: Applied Anatomy and Physiology, Microbiology and Pharmacology.

Your Course Director and students who completed their courses last Summer co-operated with us by completing questionnaires and granting personal interviews between June and September, 1980. The enclosed questionnaire, which has been revised in the light of the above first phase of the survey, is arranged in sections.

Section 1 deals with the role of the biological sciences in nursing education generally. Section 2 is concerned with the preparation which nurse tutor students received in these subjects before entry and their use during preparation as nurse tutors. Section 3 asks for personal information and provides space for you to comment on nurse tutor training, particularly the input of the above subjects into nursing education generally. Confidentiality will be maintained in respect of all information and answers given.

We are aware that this is a very busy time for you to begin to settle down into the course. We hope, however, that you will contribute towards this survey by completing this questionnaire. Your views are important.

Thank you very much indeed for your help.

Yours sincerely

J C Hayward
Project Director

Appendix 3
PRELIMINARY HANDOUT TO WARD SISTERS
Discussion with Ward Sisters

Subject: The role of the life sciences in nursing education. The range of nursing activities prescribed by GENERAL NURSING COUNCIL FOR ENGLAND AND WALES for learners in order to qualify is very wide. It covers reception and admission of patients at one end (which is highly skilled in behavioural sciences terms), to the highly technical surgical dressing and administration of drugs at the other. Each of the activities listed in the Syllabus of Training (GNC, 1977) for the General Register can be related broadly to two categories:

- a) Those involving basic nursing care for which the unqualified may be responsible e.g. simple bed-making.
- b) Those requiring knowledge and skill of highly technical procedures e.g. monitoring physiological changes in the body through observation and recording.

The ability of the individual nurse to perform tasks related to (b) separates the professional nurse from the unqualified. It is the justification for providing a statutory framework and structure for the training of learners.

In the present study which will form the basis of our forthcoming discussion, these tasks are defined and categorised in terms of:

- 1.Task operational (TO) procedures.
- 2.Task specific (TS) procedures.
- 3.Task contextual (TC) procedures.
- 4.Professional and personal development (PPD) of the learners.

These issues will be explored and discussed at our meeting and subsequent observations on the wards.

I look forward to seeing you.

Justus A Akinsanya

Researcher

November 1979.

Appendix 4
DEPARTMENT OF NURSING STUDIES
CHELSEA COLLEGE
UNIVERSITY OF LONDON

QUESTIONNAIRE FOR LEARNERS

May 1979

All replies are strictly confidential

The Role of the Biological Sciences in Nursing Education

1. Educational Background

Please tick the subject(s) you have passed at 'O' level:

Biology

Chemistry

Physics

Psychology

Sociology

2. Biological Sciences

Please indicate by a circle which of the following subjects you have found most difficult to learn during your training:

Anatomy

Physiology

Microbiology

Pharmacology

3. The use of Biological Sciences

Please list at least FIVE nursing activities which you consider that knowledge of the above subjects would enable you to initiate (or should enable you to initiate) without medical prescription:

Nursing initiated activities

(a)

(b)

(c)

(d)

(e)

In the light of the discussion which preceded this questionnaire, do you consider that the distinction between BIOMEDICAL and BIONURSING in relation to nursing activities is a valid one?

YES

NO

5. Level of knowledge of Biological Sciences

For each of the nursing activities described, please indicate (a) the two most essential subjects you need to know and (b) the level to which you think you ought to know them:

i) Subject Code

Anatomy (A)

Physiology (B)

Microbiology (C)

Pharmacology (D)

ii) Level of Knowledge Code

High level (4)

Moderate level(3)

Low level (2)

None (1)

Activity	Subject	Level
care of the unconscious patient		
management of intravenous infusion		
administration of drugs (all routes)		
taking and recording BP, Pulse, Respiration and Temperature		
preparation of patients for special tests		
care of pressure areas		
feeding via nasogastric tube		
dressing wounds		
testing urine		
emptying and removing bottles and bedpans		
administration of oxygen		
giving an enema		
explaining procedures to patients		
oral hygiene		
positioning patient up		

6. Medical Model

A surgeon who regularly taught student nurses wrote recently in an article:

Over-reliance on the medical profession for the teaching of nurses will lead to continuance of a system of teaching which is ineffective, inefficient, and in some ways harmful to the progress of nursing. Doctors are, in general, uninterested in teaching nurses, they use inappropriate methods and they teach inappropriate materials. For a large proportion of the nurse learners, the encounter is, at best, confusing in that the nurse is overwhelmed with irrelevant material which only serves to make her less able to learn what she needs to know.

Please comment overleaf on this statement indicating your agreement or disagreement.

THANK YOU VERY MUCH INDEED FOR YOUR HELP

Appendix 5

CHELSEA COLLEGE

UNIVERSITY OF LONDON

DEPARTMENT OF NURSING STUDIES

STUDY OF THE BIOLOGICAL ASPECTS OF EXISTING

NURSE TUTOR COURSES

QUESTIONNAIRE FOR NURSE TUTOR STUDENTS (ENGLAND & WALES)

(NOVEMBER 1980)

This questionnaire is divided into sections. There are three sections and all questions are preceded by appropriate instructions on how to complete them.

There is a space for comments at the end of several questions. We would most welcome these.

Please return the completed questionnaire in the stamped-addressed envelope to:

Professor J C Hayward
Project Director
Department of Nursing Studies
Chelsea College
University of London
Manresa Road
London SW3 6LX

SECTION 1 - BIOLOGICAL SCIENCES IN NURSING EDUCATION

1. Which course are you on?

Please leave
blank

Please tick

One-year (full-time)

Two-year (full-time)

Two-year (part-time)

Others, please specify:

2. What was your post-registration experience before coming on the course e.g. Charge Nurse, Ward Sister, Community Nursing Sister etc. Please specify:

PostsDuration

3. How helpful have you found the above experience in your course? Please specify:

4. For each item listed below, please indicate to what extent you agree or disagree that a qualified nurse requires a knowledge of the biological sciences to understand the significance of:

<u>NURSING ACTIVITIES</u>	Agree strongly 1	Agree 2	Disagree 3	Disagree strongly 4
Care of pressure areas	1	2	3	4
Care of intravenous infusion	1	2	3	4
Testing urine	1	2	3	4
Collecting specimens	1	2	3	4
Giving bedpans	1	2	3	4
Giving urinals	1	2	3	4
Collecting and emptying bedpans	1	2	3	4
Collecting and emptying urinals	1	2	3	4
Preparing injections	1	2	3	4
Giving injections	1	2	3	4
Giving oral care to patients	1	2	3	4
Giving pre-operative care	1	2	3	4
Giving post-operative care	1	2	3	4
Passing nasogastric tube	1	2	3	4
Checking drugs	1	2	3	4
Administering drugs	1	2	3	4
Receiving information on patients	1	2	3	4
Giving information to patients	1	2	3	4
Completing fluid balance charts	1	2	3	4
Receiving laboratory reports	1	2	3	4
Catheterising patients	1	2	3	4
Care of the unconscious patient	1	2	3	4
Resuscitating patients following cardiac arrest	1	2	3	4
Measuring blood pressure	1	2	3	4
Recording blood pressure	1	2	3	4
Taking temperature and pulse	1	2	3	4
Recording temperature and pulse	1	2	3	4
Giving intravenous injections	1	2	3	4
Giving intramuscular injections	1	2	3	4
Sterilising equipment	1	2	3	4

Others, please specify: _____

- | | Always | Often | Sometimes | Rarely | Never |
|--|--------|-------|-----------|--------|-------|
| | 1 | 2 | 3 | 4 | 5 |
| lack of adequate knowledge of the subject myself | 1 | 2 | 3 | 4 | 5 |
| attempting to simplify biological facts to learners | 1 | 2 | 3 | 4 | 5 |
| having to rely on the <u>medical model</u> to explain biological aspects of nursing care | 1 | 2 | 3 | 4 | 5 |
| a shortage of books and teaching materials prepared by specialist nurses | 1 | 2 | 3 | 4 | 5 |
| lack of access to patients while on teaching practice | 1 | 2 | 3 | 4 | 5 |

1. The first step in the process is to identify the problem or issue that needs to be addressed. This involves gathering information and understanding the context of the situation.

2. Once the problem is identified, the next step is to define the objectives and goals of the project. This helps to clarify what needs to be achieved and provides a clear direction for the team.

3. The third step is to develop a plan or strategy to address the problem. This involves breaking down the problem into smaller, manageable tasks and determining the resources needed to complete each task.

4. The fourth step is to implement the plan. This involves putting the strategy into action and monitoring progress regularly to ensure that the project is on track.

5. The final step is to evaluate the results of the project. This involves assessing the outcomes against the objectives and goals and identifying any areas for improvement.

t

[illegible]

Please leave
blank

SECTION 2 - BIOLOGICAL SCIENCES IN NURSE TUTOR PREPARATION

- (a) Do you find that your biological sciences background is adequate for coping:

- i) with the course itself?
ii) with the range of teaching normally required of a Registered Tutor?

Please tick

- (b) Please indicate the relative importance of at least five (5) of the following subjects in your preparation as a nurse tutor. Please set your choice of five (5) subjects in order of priority:

SUBJECTS:

ANATOMY, ANTHROPOLOGY, BIOLOGY, CHEMISTRY,
EDUCATION, HISTORY OF NURSING, MICROBIOLOGY,
PHARMACOLOGY, PHYSICS, PHYSIOLOGY, PSYCHOLOGY,
STATISTICS, SOCIOLOGY AND ZOOLOGY

1. _____
2. _____
3. _____
4. _____
5. _____

- (c) Please set out, from the same list of subjects, the relative importance of at least five (5) subjects to the trained nurse. Please do so by listing in order of priority:

1. _____
2. _____
3. _____
4. _____
5. _____

Please comment if you wish _____

Please leave
blank

(d) What subject areas have you found most useful in preparing you for your first post as a tutor? Please indicate these by allocating part of 100% to each of the subject areas listed below:

<u>Subject areas</u>	<u>Weighting %</u>
1. Behavioural sciences	
2. Biological sciences	
3. Educational courses	
4. Professional courses	
Total	100 %

Do you think the biological sciences knowledge possessed by most entrants to tutor courses is adequate?

Please tick

Yes

No

If 'No,' should such subjects be included in tutors' courses?

Please tick

Yes

No

If 'Yes:'

(a) which subjects would you consider most important?
Please specify:

(b) who should teach them?

Please tick

Biological scientists

Qualified nurse tutors with specialised knowledge and interest in specific biological subjects

Medical staff

Others, please specify: _____

Please leave
blank

(a) Do you think nurse tutors should be?

Please tick

i) generalists teaching all aspects
of the nursing syllabus?

ii) specialists in specific subjects?

Please comment on your answer, giving reasons, if any, for it:

(b) Please indicate your agreement or disagreement with the following
statements by ringing the appropriate number:

	Agree strongly	Agree	Disagree	Disagree strongly
<u>Statements:</u>	1	2	3	4

Nurse tutor students should be
able to specialise in specific
biological subjects during
their course of study

1	2	3	4
---	---	---	---

Specialisation by nurse tutor
students in biological sciences
is unnecessary

1	2	3	4
---	---	---	---

Any other views, please state:

Please tick

Yes No

A) Generally?

B) In biological sciences specifically?

If 'No,' to (A) and(B) please go on to section (d)

0(b) If 'Yes,' what form does this guidance take?

Please tick

Discussion before and after lesson

Discussion before the lesson

Discussion after the lesson

Advice on the choice of appropriate biological concepts for use in the lesson

Advice on the choice of teaching methods

0(c) With whom does the discussion take place?

Please tick

Course tutor at College?

Member of the staff of School
of Nursing?

Others, please specify: _____

0(d) If 'No,' to (a) and (b) how do you gain knowledge about the biological sciences aspect of your lesson preparation? Please specify:

Please leave
blank

11. How often was your Course Tutor or any other experienced tutor present during your teaching practice? Please ring the number which best answers the question for you:

Always Sometimes Rarely Never

	1	2	3	4
Course Tutor present	1	2	3	4
Qualified Nurse Tutor present	1	2	3	4
Lecturer from College present	1	2	3	4
Others, please state designation:				
-----	1	2	3	4
-----	1	2	3	4

- 12 Are you in contact with learners in the ward/clinical areas during your teaching practice in a School of Nursing?

Please tick

Yes

No

If 'Yes,' how often are you in contact with learners?

Please tick

Monthly

Weekly

Others, please specify: _____

If 'No,' why could you not have such a contact with learners?

Was this:

Please tick

(a) from choice?

(b) from circumstances?

Please explain:

[illegible]

13. Which of the following have you taught as a main subject during your teaching practice? Please ring the appropriate number:

	Regularly taught	Occasionally taught	Not taught
	1.	2.	3
Applied Anatomy and Physiology	1	2	3
Microbiology	1	2	3
Pharmacology	1	2	3
Pathology	1	2	3

Others, please specify:

14. Have you taught the subjects listed below to groups of learners indicated? Please tick in appropriate column. P = Pupil S = Student

Nursing subject:

	Introductory		First Year		Second Year		Third Year
	P	S	P	S	P	S	S
Medical nursing	P	S	P	S	P	S	S
Surgical nursing	P	S	P	S	P	S	S
Ophthalmic nursing	P	S	P	S	P	S	S
Orthopaedic nursing	P	S	P	S	P	S	S
Obstetric nursing	P	S	P	S	P	S	S
Gynaecological nursing	P	S	P	S	P	S	S
E N T nursing	P	S	P	S	P	S	S
Psychiatric nursing	P	S	P	S	P	S	S
Paediatric nursing	P	S	P	S	P	S	S
Geriatric nursing	P	S	P	S	P	S	S
Theatre nursing	P	S	P	S	P	S	S
Community nursing	P	S	P	S	P	S	S

Please comment on your teaching of the above subjects if you wish:

5. Were there any specific difficulties associated with the application of biological sciences in teaching the above nursing subjects to learners?

Please tick

Yes

No

If 'Yes,' can you think of any specific examples related to any or all of the above nursing subjects? Please specify:

6. Listed below are areas of nursing practice. Please ring the level of biological knowledge you would think suitable for nurses working in each:

Area of nursing practice

Level of biological
knowledge required

Very High

Very Low

1 2 3 4 5

Medical nursing	1	2	3	4	5
Surgical nursing	1	2	3	4	5
Ophthalmic nursing	1	2	3	4	5
Orthopaedic nursing	1	2	3	4	5
Obstetric nursing	1	2	3	4	5
Gynaecological nursing	1	2	3	4	5
E N T nursing	1	2	3	4	5
Psychiatric nursing	1	2	3	4	5
Paediatric nursing	1	2	3	4	5
Geriatric nursing	1	2	3	4	5
Theatre nursing	1	2	3	4	5
Community nursing	1	2	3	4	5
Intensive care nursing	1	2	3	4	5
Neurological nursing	1	2	3	4	5
Oncology nursing	1	2	3	4	5

17. What levels of biological sciences do learners require in relation to the following nursing activities? Please indicate the level you consider appropriate by ringing the number which best reflects your own assessment of learners' needs:

Area of nursing practice

Level of biological
knowledge required
Very High Very Low

Care of pressure areas	1	2	3	4	5
Care of intravenous infusion	1	2	3	4	5
Testing urine	1	2	3	4	5
Collecting specimens	1	2	3	4	5
Giving bedpans	1	2	3	4	5
Giving urinals	1	2	3	4	5
Collecting and emptying bedpans	1	2	3	4	5
Collecting and emptying urinals	1	2	3	4	5
Preparing injections	1	2	3	4	5
Giving injections	1	2	3	4	5
Giving oral care to patients	1	2	3	4	5
Giving pre-operative care	1	2	3	4	5
Giving post-operative care	1	2	3	4	5
Passing nasogastric tube	1	2	3	4	5
Checking drugs	1	2	3	4	5
Administering drugs	1	2	3	4	5
Receiving information on patients	1	2	3	4	5
Giving information to patients	1	2	3	4	5
Completing fluid balance charts	1	2	3	4	5
Receiving laboratory reports	1	2	3	4	5
Catheterising patients	1	2	3	4	5
Care of the unconscious patient	1	2	3	4	5
Resuscitating patients following cardiac arrest	1	2	3	4	5
Measuring blood pressure	1	2	3	4	5
Recording blood pressure	1	2	3	4	5
Taking temperature and pulse	1	2	3	4	5
Recording temperature and pulse	1	2	3	4	5
Giving intravenous injections	1	2	3	4	5
Giving intramuscular injections	1	2	3	4	5
Sterilising equipment	1	2	3	4	5

Please comment on your answers, if you wish: _____

Please leave
blank

8. Listed below are areas of biological sciences which are included in the syllabus for basic nursing education. Which of these do you consider the most important in nursing? Please ring the most appropriate number on the scale below:

Areas of biological sciences
in the syllabus

Importance attached
Very Important Not Important
1 2 3 4 5

a) General

Sterilisation and Disinfection
Systematic study of the human body
Human nutrition
Classification of microorganisms
Chemotherapy

1	2	3	4	5
1	2	3	4	5
1	2	3	4	5
1	2	3	4	5
1	2	3	4	5

b) Body functions

Respiration
Excretion
Growth
Reproduction
Locomotion
Sensitivity

1	2	3	4	5
1	2	3	4	5
1	2	3	4	5
1	2	3	4	5
1	2	3	4	5
1	2	3	4	5

c) Drugs action on:

Respiratory system
Cardiovascular system
Alimentary system
Urinary system
Female genital system
Endocrine system
The skin
The eyes, ears and mouth

1	2	3	4	5
1	2	3	4	5
1	2	3	4	5
1	2	3	4	5
1	2	3	4	5
1	2	3	4	5
1	2	3	4	5
1	2	3	4	5

- d) Please list, in order of importance, at least six of the above areas in nursing:

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____

SECTION 3 - PERSONAL INFORMATION AND COMMENTS

19. Please state your:

Qualifications

Year Obtained

20. What was your last appointment? Please specify:

21. Which of the following educational qualifications have you obtained?
Please ring the appropriate number:

(a) General Certificate of Education 'O' levels or equivalent:

Biology	1
Chemistry	2
Physics	3
Sociology	4
Psychology	5
Mathematics	6

Others, please specify:

(b) General Certificate of Education 'A' levels or equivalent:

Biology	1
Chemistry	2
Physics	3
Sociology	4
Psychology	5
Mathematics	6

Others, please specify:

(c) Degree - please specify subject/field: _____

Other qualifications, please specify: _____

blank

Please tick

Part B

Please tick

Female

Age range

25 - 29	1
30 - 34	2
35 - 39	3
40 - 44	4
45 - 49	5
50+	6

1

THANK YOU VERY MUCH FOR YOUR HELP

CHELSEA COLLEGE

UNIVERSITY OF LONDON

DEPARTMENT OF NURSING STUDIES

STUDY OF THE BIOLOGICAL ASPECTS OF
EXISTING NURSE TUTOR COURSES

QUESTIONNAIRE FOR NURSE TUTOR STUDENTS (ENGLAND & WALES)

The questionnaire is divided into sections. There are three sections and all questions are preceded by appropriate instructions on how to complete them.

There is a space left after several questions, and at the end of the questionnaire, for your comments which we would welcome.

Please return the completed questionnaire in the stamped-addressed envelope to:

Professor J.C. Hayward
Department of Nursing Studies
Chelsea College
University of London
Manresa Road
London SW3 6LX

SECTION 1 - BIOLOGICAL SCIENCES IN NURSING EDUCATIONPlease
leave blank

1. Which course are you on?

Please tick

One-year(full-time)

Two-year(full-time)

Two-year(part-time)

2. What was your post-registration experience before coming on the course e.g. Ward Sister, Clinical Teacher etc.

3. Please comment on how helpful you think the above experience will be to you during the course:

4. For each item listed below, please indicate to what extent you agree or disagree that a qualified nurse requires a knowledge of the biological sciences to understand the significance of:

NURSING ACTIVITIES

Agree
strongly

Agree Disagree Disagree
strongly strongly

Care of pressure areas	1	2	3	4
Care of IV infusion	1	2	3	4
Testing urine	1	2	3	4
Collecting specimens	1	2	3	4
Giving bedpans	1	2	3	4
Giving urinals	1	2	3	4
Collecting and emptying bedpans	1	2	3	4
Collecting and emptying urinals	1	2	3	4
Preparing injections	1	2	3	4
Giving injections	1	2	3	4
Giving oral care to patients	1	2	3	4
Giving pre-operative care	1	2	3	4
Giving post-operative care	1	2	3	4
Passing naso-gastric tube	1	2	3	4
Checking drugs	1	2	3	4
Administering drugs	1	2	3	4
Receiving information on patients	1	2	3	4
Giving information to patients	1	2	3	4
Completing fluid balance charts	1	2	3	4
Receiving laboratory reports	1	2	3	4
Catheterising patients	1	2	3	4
Care of the unconscious patient	1	2	3	4
Resuscitating patients	1	2	3	4
Measuring blood pressure	1	2	3	4
Recording blood pressure	1	2	3	4
Taking temperature and pulse	1	2	3	4
Recording temperature and pulse	1	2	3	4
Giving intravenous injections	1	2	3	4
Giving intramuscular injections	1	2	3	4
Sterilising equipment	1	2	3	4

	Always	Often	Sometimes	Rarely	Never
Lack of adequate knowledge of the subject myself	1	2	3	4	5
Attempting to simplify biological facts to mixed ability groups of learners	1	2	3	4	5
My reliance on the <u>medical model</u> to explain biological aspects of nursing care	1	2	3	4	5
Shortage of books and teaching materials prepared by specialist nurses	1	2	3	4	5
My lack of access to patients while on teaching practice	1	2	3	4	5

This image shows a full page of white paper with horizontal dashed lines. The lines are evenly spaced and run across the entire width of the page, providing a guide for handwriting practice. There are no margins, text, or other markings on the paper.

6. Listed below are various approaches to teaching. Please indicate how important or useful you consider these methods to be when teaching learners the biological sciences in relations to:

(a) teaching the theory

(b) teaching the application

<u>TEACHING METHOD</u>	<u>THEORY/PRACTICE</u>	<u>IMPORTANCE ATTACHED</u>				
		Very Important			Not Important	
PROJECTS ASSIGNMENT	THEORY	1	2	3	4	5
	PRACTICE	1	2	3	4	5
SIMULATIONS	THEORY	1	2	3	4	5
	PRACTICE	1	2	3	4	5
GROUP DISCUSSIONS	THEORY	1	2	3	4	5
	PRACTICE	1	2	3	4	5
QUESTIONING TECHNIQUES	THEORY	1	2	3	4	5
	PRACTICE	1	2	3	4	5
PROGRAMMED LEARNING	THEORY	1	2	3	4	5
	PRACTICE	1	2	3	4	5

Please comment on the specific aims and objectives you adopt in teaching the biological sciences to learners:

SECTION 2 - BIOLOGICAL SCIENCES IN NURSE TUTOR EDUCATION

- 7(a) Are you, on balance, satisfied with the background knowledge of the biological sciences with which you entered the course?

	Please tick
Yes	<input type="checkbox"/>
No	<input type="checkbox"/>

- 7(b) Please indicate the relative importance of at least FIVE (5) of the following subjects in your preparation as a nurse tutor. Please set your choice of FIVE subjects in order of priority:

THE SUBJECTS ARE:

ANATOMY, ANTHROPOLOGY, BIOLOGY, CHEMISTRY, EDUCATION, HISOT
HISTORY OF NURSING, MICROBIOLOGY, PHARMACOLOGY, PHYSICS,
PHYSIOLOGY, PSYCHOLOGY, STATISTICS, SOCIOLOGY AND ZOOLOGY:

- 1.-----
- 2.-----
- 3.-----
- 4.-----
- 5.-----

- 7(c) Please set out, from the same list of subjects, the relative importance of at least FIVE (5) subjects to the trained nurse. Please do so by listing in order of priority:

- 1.-----
- 2.-----
- 3.-----
- 4.-----
- 5.-----

Please comment on what you consider to be the role of the biological sciences (specifically Anatomy, Physiology, Microbiology and Pharmacology) in nursing education:

Please leave
blank

7d Which of the subject areas listed below do you consider would be most suitable in preparing nurse tutors for their future teaching responsibilities? Please indicate these by allocating part of 100% to each subject area:

	Weighting %
Behavioural sciences	<input type="text"/>
Biological sciences	<input type="text"/>
Educational courses	<input type="text"/>
Professional courses	<input type="text"/>
Total	100%

8a Do you think the knowledge of the biological sciences as measured by a pass in the Diploma in Nursing (Part A) is sufficient for entrants to nurse tutor courses?

	Please tick
Yes	<input type="checkbox"/>
No	<input type="checkbox"/>

8b If 'No,' should aspects of these subjects be included in the nurse tutor course?

	Please tick
Yes	<input type="checkbox"/>
No	<input type="checkbox"/>

8c If 'Yes,' please specify the subjects you wish to see included:

9(a) Do you think nurse tutors should be?

Please tick

i) Generalists teaching all subjects

ii) Specialists in specific subjects

Please comment on your answer, giving reasons, if any, for it:

9(b) Please indicate your agreement or disagreement with the following statements by ringing the appropriate number:

STATEMENT Agree Agree Disagree Disagree
 strongly strongly

Nurse tutor students should specialise in in specific biological subjects during their course of study	1	2	3	4
Specialisation by nurse tutor students in biological sciences is unnecessary during their course of study	1	2	3	4
Opportunities to specialise specialise should be available during the course of study	1	2	3	4

Any other views, please state:

10. What levels of biological sciences knowledge do you consider learners require in relation to the following nursing activities? Please indicate the level you consider appropriate by ringing the number which best reflects your own assessment of learners' needs:

NURSING ACTIVITIES Agree Agree Disagree Disagree
 strongly strongly

Care of pressure areas	1	2	3	4
Care of IV infusion	1	2	3	4
Testing urine	1	2	3	4
Collecting specimens	1	2	3	4
Giving bedpans	1	2	3	4
Giving urinals	1	2	3	4
Collecting and emptying bedpans	1	2	3	4
Collecting and emptying urinals	1	2	3	4
Preparing injections	1	2	3	4
Giving injections	1	2	3	4
Giving oral care to patients	1	2	3	4
Giving pre-operative care to patients	1	2	3	4
Giving post-operative care to patients	1	2	3	4
Passing naso-gastric tube	1	2	3	4
Checking drugs	1	2	3	4
Administering drugs	1	2	3	4
Receiving information on patients	1	2	3	4
Giving information to patients	1	2	3	4
Completing fluid balance charts	1	2	3	4
Receiving laboratory reports	1	2	3	4
Catheterising patients	1	2	3	4
Care of the unconscious patient	1	2	3	4
Resuscitating patients	1	2	3	4
Measuring blood pressure BP	1	2	3	4
Recording BP	1	2	3	4
Taking TPR	1	2	3	4
Recording TPR	1	2	3	4
Assisting with IV injection	1	2	3	4
Giving intramuscular injections	1	2	3	4
Sterilising equipment	1	2	3	4

11. Listed below are areas of biological sciences which are included in the Syllabus for Basic Nursing Education of the General Nursing Council for England and Wales. Which of these do you consider the most important for nurses to learn and apply? Please ring the most appropriate number on the scale below:

AREA

IMPORTANCE ATTACHED

AREAS OF BIOLOGICAL SCIENCES
IN THE SYLLABUS (G N C)

Very Important Not Important

a) General

Sterilisation and Disinfection	1	2	3	4	5
Systematic study of the human body	1	2	3	4	5
Human nutrition	1	2	3	4	5
Classification of micro-organisms	1	2	3	4	5
Chemotherapy	1	2	3	4	5
b) <u>Body functions</u>					
Respiration	1	2	3	4	5
Excretion	1	2	3	4	5
Growth	1	2	3	4	5
Reproduction	1	2	3	4	5
Locomotion	1	2	3	4	5
Sensitivity	1	2	3	4	5
c) <u>Drugs action on:</u>					
Respiratory system	1	2	3	4	5
Cardiovascular system	1	2	3	4	5
Alimentary system	1	2	3	4	5
Urinary system	1	2	3	4	5
Female genital system	1	2	3	4	5
Endocrine system	1	2	3	4	5
The skin	1	2	3	4	5
The eyes, ears and mouth	1	2	3	4	5

Please comment, if you wish:

2. Please state your qualifications and the years you obtained them:

Please leave blank

Qualifications Year Obtained

3. What was your last appointment before coming on the course? Please specify:

4. Which of the following educational qualifications have you obtained? Please tick the appropriate number:

(a) GCE 'O' levels or equivalent:-

Biology	1
Chemistry	2
Physics	3
Sociology	4
Psychology	5
Mathematics	6

(b) GCE 'A' levels or equivalent:-

Biology	1
Chemistry	2
Physics	3
Sociology	4
Psychology	5
Mathematics	6

(c) Degree obtained:

Please specify-----

(d) Any other qualifications? Please specify:

15. Have you obtained passes in the Diploma in Nursing Examinations of the University of London?

Please leave blank

	Please tick
Yes	<input type="checkbox"/>
No	<input type="checkbox"/>

16. If 'Yes,' please indicate whether you passed:

	Please tick
Part A	<input type="checkbox"/>
Part B	<input type="checkbox"/>

17. Are you?

	Please tick
Male	<input type="checkbox"/>
Female	<input type="checkbox"/>

18. Please indicate your age range below by ticking the appropriate number:-

Age range	
25-29	1
30-34	2
35-39	3
40-44	4
45-49	5
50+	6

If you wish to make further comments on the role of the biological sciences in nursing education or the training of teachers of nurses, please do so. Continue overleaf if necessary:

THANK YOU VERY MUCH INDEED FOR YOUR HELP

Appendix 6

SUBJECT: THE ROLE OF THE LIFE SCIENCES IN NURSING EDUCATION

An Undertaking

Permission for Access to Learners in Schools of Nursing

This is to acknowledge that with regard to the facilities made available to me by the School of Nursing in respect of nursing research studies conducted by me, the following undertaking will be adhered to:

- a) That confidentiality and anonymity will obtain in respect of learners and personnel involved.
- b) That matters pertaining to the School of Nursing will be submitted to the Director of Nurse Education for vetting prior to publication.

Justus A Akinsanya (Signed)

21 February 1979

Director of Nurse Education (Signed)

21 February 1979

Appendix 6a

SUBJECT: THE ROLE OF THE LIFE SCIENCES IN NURSING EDUCATION

An Undertaking

Permission for Access to Learners in Schools of Nursing

This is to acknowledge that with regard to the facilities made available to me by the District Nursing Officer and the Director of Nurse Education in connection with my study into the role of the 'biomedical' and 'bionursing' sciences, I undertake to:

1. Maintain confidentiality and anonymity in respect of all information relating to learners and personnel involved.
2. Submit to the District Nursing Officer and the Director of Nurse Education all materials pertaining to my work in the School and Hospital for perusal. No publication will be undertaken in respect of any materials without the prior approval of the District Nursing Officer and Director of Nurse Education.

Justus A Akinsanya (Signed)

Postgraduate Researcher

District Nursing Officer (Signed)

Director of Nurse Education (Signed)

Appendix 6b

SUBJECT: THE ROLE OF THE LIFE SCIENCES IN NURSING EDUCATION

Correspondence concerning undertaking to Schools of Nursing
and Hospitals for publication of paper

19 July 1979

Dear

I am writing to inform you that the first paper in connection with my project is being prepared for publication. It is titled:

Biological sciences in nursing education: the contribution of
bionursing

In accordance with the undertaking that nothing will be published without the prior approval by you, I would like to say that this paper sets out the main theoretical considerations for the project. It does not refer to the name of any institution although it does acknowledge the considerable indebtedness to the co-operating institutions.

We have not included any of the data collected and, therefore, no specific information of the nature you might like to see before publication is being used.

Would you like to see a copy of the paper before publication? I would be very happy to make the necessary copy available to you.*

With best wishes

Yours sincerely

Justus A Akinsanya
Researcher

Appendix 7

DEPARTMENT OF NURSING STUDIES

Chelsea College

UNIVERSITY OF LONDON

30 June 1980

LETTER TO COURSE DIRECTORS

Dear

BIOLOGICAL ASPECTS OF EXISTING NURSE TUTOR COURSES

Following my recent letter about the above project, I am writing to request for a suitable date for you to meet my research associate, Justus Akinsanya, in order to discuss certain aspects of the preparation of nurse tutors. An interview schedule is being prepared for this purpose and it is hoped that this will cover the following areas of interest in this project.

1. Departmental/course overview.
2. Admission procedures and criteria for use.
3. Estimation of knowledge of students in the biological sciences on entry.
4. Planning of courses involving the biological sciences.
5. Teaching responsibilities of staff in areas of biological sciences.
6. Importance of the biological sciences in the preparation of nurse tutors as perceived by the staff.
7. Medical specialists as contributors to the teaching of biological sciences.
8. Teaching methods in use.
9. Supervision of teaching practice.
10. Liaison with Schools of Nursing.
11. Library contribution to the preparation of nurse tutors in biological sciences.
12. Biological sciences in Nursing Education.

It would be most appreciated if you could kindly suggest at least two suitable alternative dates in the months of July and/or August when Mr Akinsanya can come to see you.

I look forward to hearing from you.

Yours sincerely

J C Hayward
Project Director

Appendix 8

BIOLOGICAL ASPECTS OF EXISTING NURSE TUTOR COURSESINTERVIEW WITH HEADS OF DEPARTMENTS AND COURSE DIRECTORS

Name _____ Position _____

Institution _____ Date _____ Time _____

Departmental title _____
(To be completed by interviewer)INTERVIEW

Introduction to the Project:

- i) Preliminary study (copy of published paper to be available)
- ii) Brief introduction to the nurse tutor student questionnaire and the response to-date. Remind of the delay in the return of questionnaires. Note any other relevant feedback:

- iii) Request for permission for conversation to be taped. If agreed, emphasise that absolute confidentiality will be maintained and no quotation used will be personalised.

SWITCH ON TAPE AND ENSURE THAT IT IS RUNNING
SATISFACTORILY.

BEGIN INTERVIEW:

Appendix 8

3. How do you judge the level of knowledge of biological sciences of students on entry?

Assumed sufficient if passed:

DipN Part A

DipN Parts A & B

Special test given

4. Do you conduct an entrance test to the course?

Yes ☐ No ☐

If 'Yes' is it:

i) General knowledge

ii) Aptitude for teaching

iii) Aspects of biological sciences

Comments: _____

5. In planning courses for the year, are there any provisions for the inclusion of biological sciences?

Yes ☐
No ☐

6. If there is a biological aspect included in the course how is this planned?

i) Involvement of specialist lecturers

ii) Appointment of a qualified nurse tutor with interest in biological sciences

iii) Others _____

☐
☐

7. Are medical staff involved in the teaching of pathological aspects of the course?

Yes ☐ No ☐

Leave
Blank

QUESTIONSANSWERS

1. What type of course for nurse tutor did you undertake?

1 year (full-time) ☐

2 year (full-time) ☐

Others: _____

2. Admission procedures:

i) What are your course requirements?

As stipulated by the GNC ☐

G C E 'O' levels

2 subjects ☐

2 - 5 subjects ☐

5 or more subjects ☐

G C E 'A' levels

1 subject ☐

2 or more subjects ☐

ii) Do you insist on passes in science subjects in two or more subjects?

Yes ☐

No ☐

iii) Do you accept passes in Diploma in Nursing?

Part A ☐

Part B ☐

Parts A & B ☐

iv) What other qualifications would you consider for admission purposes?

v) What is the minimum professional qualification accepted for the course in addition to the above?

SRN only ☐

RMN only ☐

A second qualification required. ☐

Comments on admission procedures, criteria etcetera:

8. If medical staff are involved, are guidelines provided for them on the level of knowledge of the biological sciences appropriate for nurse tutor students?

Yes ☐ No ☐

Comments on guidelines (if any) _____

9. Does any member of the staff teach aspects of biological sciences during the course.

Yes ☐ No ☐

10. How important does the Head/Course Tutor view the biological sciences in the preparation of nurse tutors?

Very Important ☐
Important ☐

Other views: _____

11. How effective is the approach to the teaching of biological sciences on this programme?

Effective ☐

Other views: _____

12. How are nurse tutor students prepared to meet the problem of transmitting knowledge of the biological sciences to learners?

Comments _____

13. What is the policy of the Department on methods of evaluating the effectiveness of the use of biological sciences in the preparation of nurse tutor students?

Comments: _____

14. What are the main teaching methods in use?

Lecture
Seminar
Clinical
Group Discussions
Project assignment
Tutorials
Videotape recording
Others: _____

15. Are students involved in ward based teaching of learners?

Yes ☐ No ☐

16. Who supervises the students' teaching practices?

College Lecturer
Tutor in School of Nursing

17. Is the biological content of the student's lesson preparation supervised?

Yes ☐ No ☐

18. Is such supervision undertaken before a lesson?

Yes ☐ No ☐

19. What form does the supervision take?

Discussion of main concepts
Detailed comments on preparation in writing

20. How often during the entire course is a student supervised during a lesson in the School of Nursing?

5 Occasions or more
10 or more occasions
15 or more occasions
20 or more occasions

Comments: _____

21. How often does the Department liaise with the School of Nursing during the period of teaching practice by the student?

Weekly
Monthly
Others: _____

22. Is a formal report given on a student's performance during period of teaching practice? Yes ☐ No ☐
23. Is there specific references to the biological courses taught in such reports? Yes ☐ No ☐
24. Is the library sufficiently equipped to cater for biological, medical and nursing subjects? Yes ☐ No ☐
25. Is there provision for separate departmental specialist library to cater for nurse tutor students? Yes ☐ No ☐
26. What nursing journals are regularly available to students and staff?
- | | |
|---|--------------------------|
| Nursing Times | <input type="checkbox"/> |
| Nursing Mirror | <input type="checkbox"/> |
| Journal of Advanced Nursing | <input type="checkbox"/> |
| International Journal of Advanced Nursing | <input type="checkbox"/> |
| Nursing Outlook | <input type="checkbox"/> |
27. Are research and other professional publications available to staff and students? Yes ☐ No ☐
- Comments: _____

28. On balance, are you satisfied with the present system in relation to biological sciences in nurse tutor preparation? Yes ☐ No ☐
- Comments: _____

29. How does the Head/Course Director see future developments in nurse teacher preparation? _____

30. What is the Head/Course
Director view on the Briggs
Committee recommendation
that nurse tutors should
specialise in specific
subjects?

GENERAL REMARKS

31. Would the Head/Course
Director participate in
the next stage of the
studies?

Yes

☐

No

☐

32. Any questions on the study?

Note any on the following:

QUESTIONS (IF ANY)

Qualifications of interviewee
(may be obtained from College
prospectus)

Concluding remarks (Interviewer):

- 4) Planning of courses involving the biological sciences
- Is the biological contents of courses deliberately planned?
 - Is the head or course director involved in the planning?
 - Are specialists from other departments involved in the planning?
 - Are medical staff involved in the planning?
 - What criteria are used to determine the level to which the subjects are to be taught?
- 5) Teaching responsibilities
- What teaching responsibilities does the head/course director have?
 - Is any of the teaching commitments in areas of biological sciences?
 - What changes, if any, are required in the teaching of biological sciences?
 - How does research in nursing relate to the teaching of biological sciences?
- 6) Importance of biological sciences in nursing education
- What are the views of the head/course director on the input of biological sciences in the preparation of teachers of nurses?
 - How is the problem of application of knowledge of the biological sciences to nursing practice tackled on the course?
 - How is the problem of transmission of knowledge of the biological sciences to learners tackled?
 - Is there a policy on methods of evaluating the input of biological sciences and its effectiveness in the preparation of the student tutors?
- 7) Medical and specialist staff
- Who is responsible for teaching:
 - Applied Anatomy and Physiology?
 - Microbiology?
 - Pharmacology?
 - Pathology?
 - Are lecturers in nursing involved directly in the teaching of any or all of the above subjects?

THE LIFE SCIENCES IN NURSE TUTOR COURSES

Development of Interview Schedule used for department heads and course directors of institutions preparing nurse tutors:

<u>Area covered</u>	<u>Sample questions:</u>
1) Departmental overview	<p>How does the head see departmental developments in relation to the preparation of teachers of nurses?</p> <p>Has the department any specific objectives on the input of biological sciences into nurse tutor preparation?</p> <p>What is the departmental view of the Briggs recommendation that nurse tutors should specialise in specific subjects?</p> <p>Is the department encouraging specialisation in specific subjects among the student tutors?</p>
2) Admission procedures and criteria	<p>What are the general requirements for admission to the course?</p> <p>How important is the possession of the Diploma in Nursing in accepting a prospective student on the course?</p> <p>What specific educational background is considered essential in the biological sciences for intending students?</p> <p>Is post-registration experience in specific areas of clinical practice required?</p> <p>What is the minimum professional qualification required for admission to the course?</p>
3) Estimation of knowledge of students on entry	<p>How does the department estimate the level of knowledge of biological sciences of students on entry?</p> <p>Is the level of such knowledge generally satisfactory?</p> <p>What are the major areas of concern in those with inadequate knowledge of the biological sciences?</p>

- How effective and useful is the contribution of specialist lecturers in the above subjects?
- 8) Teaching methods in use What educational methods are used in the teaching of students?
- Are students encouraged to practice ward-based teaching?
- Is video tape recording used in teaching?
- Are students encouraged to use tutorial and group discussions in teaching?
- How effective are the above in relation to the teaching of biological sciences?
- 9) Supervision on teaching practice Who is responsible for supervising the teaching practice of students?
- How often does such supervision take place?
- Is the biological content of the subject-matter of a student lesson preparation examined?
- Who is responsible for such an examination and advice to the student?
- 10) Liaison with Schools How often is the head in contact with Schools of Nursing accepting students for teaching practice?
- Is a formal report given on each student?
- What specific problem areas have been identified in relation to biological sciences?
- 11) Library How adequate for teaching biological and medical/nursing subjects?
- Is there a departmental library catering specifically for needs of nurse tutor students?
- Are all journals in nursing taken regularly?
- How does the course director ensure familiarity of students with recent professional and research developments in nursing education and practice?
- What use do students make of libraries elsewhere, e.g., RCN?

12) Biological
sciences in
nursing education

Is the head/course director satisfied
with the present position regarding the
input of biological sciences in the pre-
paration of nurse tutors?

What changes or improvements would he/she
like to see?

Appendix 9a
Coding information for independent coders

Please complete this form when you have coded the transcript.

Nature of answer (see coding instructions)

A POSITIVE

B NEGATIVE

C NEUTRAL

Transcript No....

No of answer on Transcript *	Positive		Negative		Neutral	
1						
2						
3						
4						
5						
6						
7						
8						
9						
10						
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						

* One transcript may contain more than twenty answers.

Appendix 9b

Coding framework for interviews with course directors

CODING FRAMEWORK FOR INTERVIEWS WITH COURSE DIRECTORSCODER NO.CODING INFORMATION FOR INDEPENDENT CODERSPlease read the following instructions and code the attached transcript.Example

Interviewer's response	Positive	Neutral	Negative	Not Coded
1	A	B	C	D

A POSITIVE RESPONSE denotes one which supports or appears to support the life/biological sciences as part of the preparation of nurse tutors.

A NEUTRAL RESPONSE denotes one which, while not supporting or appears to be supporting the life/biological sciences as part of the preparation of nurse tutors, nevertheless does not reject the possibility outright.

A NEGATIVE RESPONSE denotes one which completely rejects the contribution of the life/biological sciences to the preparation of nurse tutors.

Note:

In deciding on which of the three codes to use, you are required to consider the overall impression which the response makes. For example, an answer on teaching practice supervision which says that the life/biological sciences part of the lesson preparation is not supervised is not necessarily a negative one if the overall impression of the response is that it ought to be so.

If you find it impossible to code a particular response, please use code D above. It would be helpful if you could avoid the use of code D unless it is absolutely impossible to assign the the response to one of the other codes.

Each transcript would take less than an hour to code and it would be appreciated if you could return your coding sheet and the transcript in the enclosed stamped-addressed envelope to reach me by.....1983.

Thank you very much for your help.

Name of coder.....

Address.....

Present position.....

Justus A Akinsanya

Appendix 10

Instructions for Independent Coders

Dear Colleague

THE ROLE OF THE LIFE SCIENCES IN NURSING EDUCATION

Attached is the transcript of an interview held with the Director of one of the twelve nurse tutor courses in England and Wales. In order to get an independent assessment of the views expressed in the interview, I would be most grateful if you could kindly read the transcript and give your reaction to the contents.

The interview was concerned with the role of the life sciences in the preparation of nurse tutors, specifically, and nursing education, in general i.e. anatomy, physiology, microbiology and pharmacology. The object of the exercise was to canvass the views of those responsible for the preparation of nurse tutors on the role of the sciences in the course that they prepare the students to teach.

The interview covered the following areas:

1. Overview of departmental work
2. Admission procedures and criteria
3. Estimation of knowledge of students on entry
4. Planning of the course and the role of the life sciences in the curriculum
5. Teaching responsibilities of staff on the course.
6. Importance of the life sciences in nursing education as perceived by staff
7. Contribution of medical staff
8. Teaching methods in use
9. Supervision of students on teaching practice.
10. Liaison with schools of nursing
11. Library facilities for students
12. Overview of the role of the life sciences in nursing education.

Please indicate at the side of each answer whether or not you consider it:

i) Positive (indicated by placing an A at the side of the answer)

ii) Neutral (indicated by placing a B at the side of the answer)

iii) Negative (indicated by placing a C at the side of the answer)

A stamped-addressed envelope is enclosed for the return of the transcript with your rating of its content.

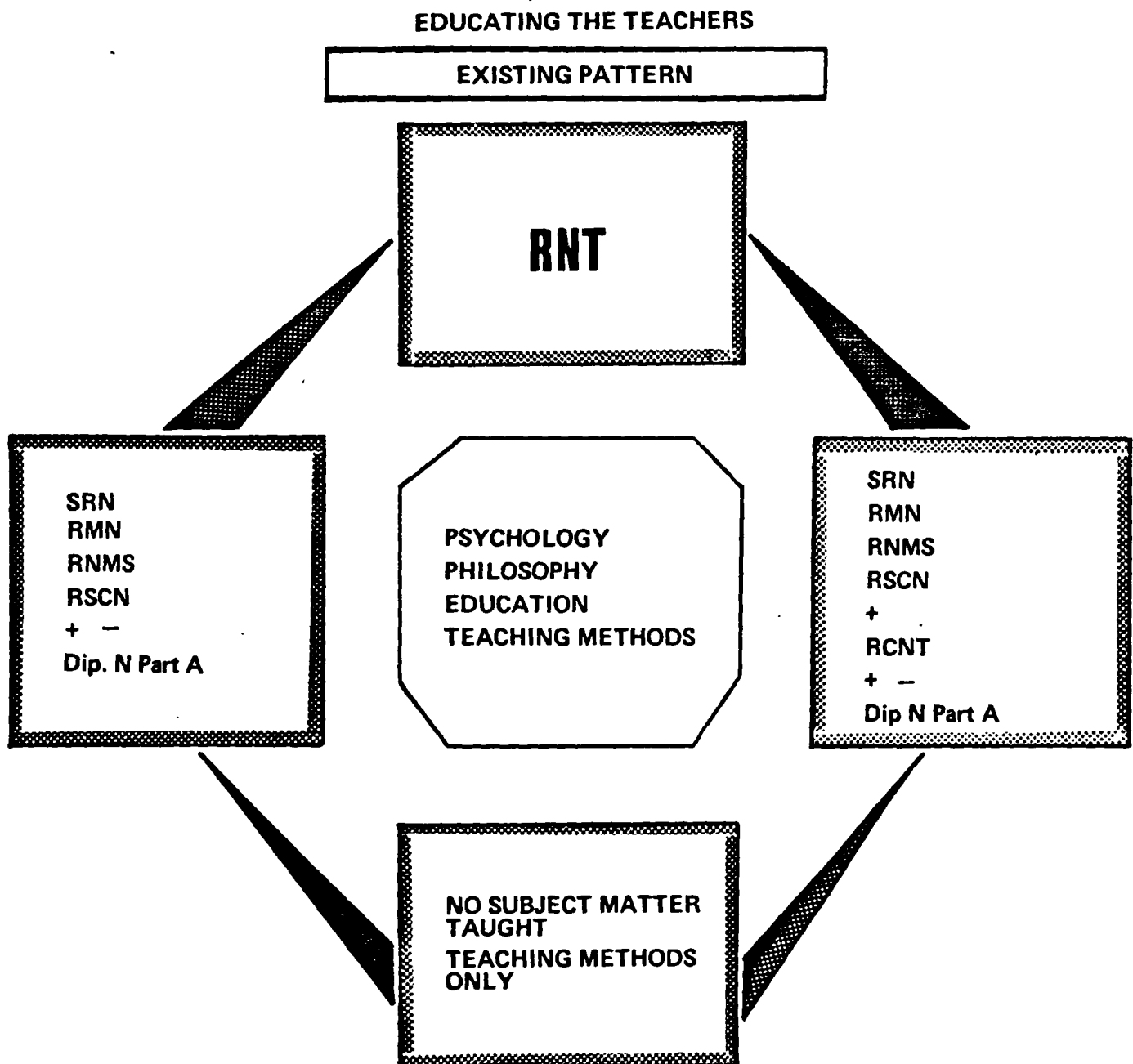
Thank you very much for your help.

Yours sincerely

Justus A Akinsanya
Researcher
July 1982

Appendix 11

Model of Teacher Education in Nursing

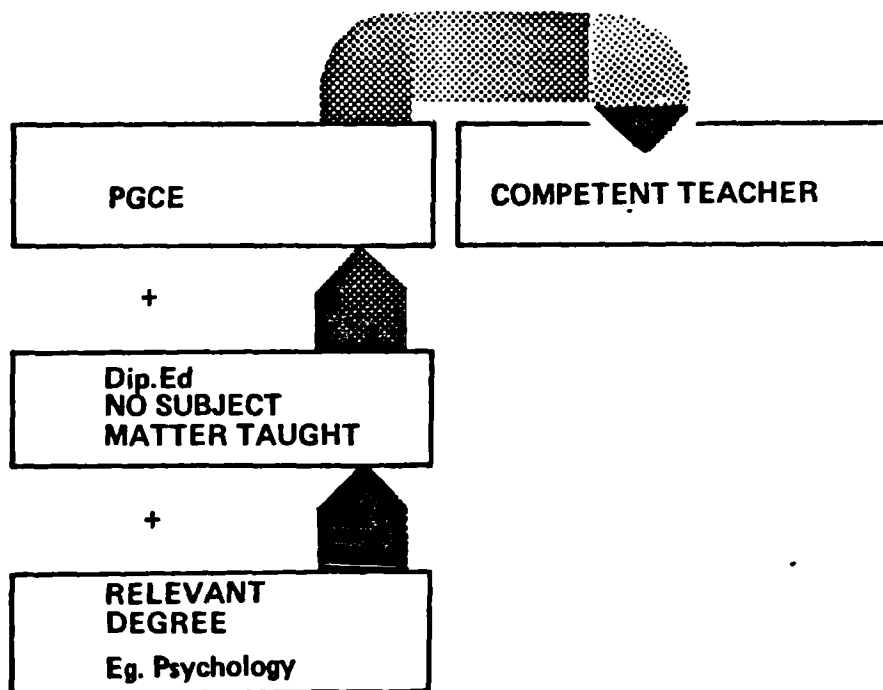


Appendix 11a

Thouless's Model of Teacher Education

EDUCATING THE TEACHERS

THOULESS'S MODEL

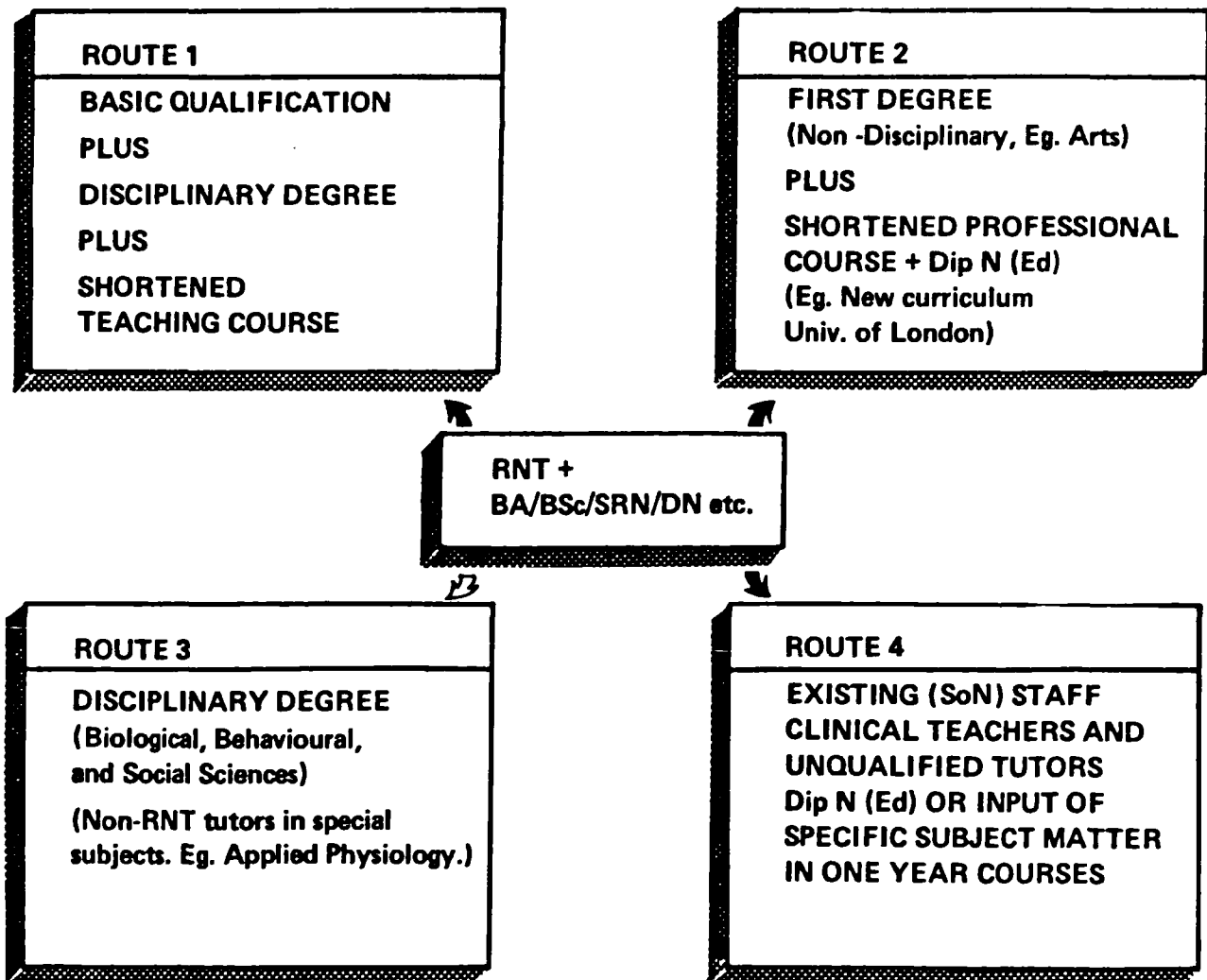


Appendix 11b

Hayward's Model of Nurse Teacher Preparation

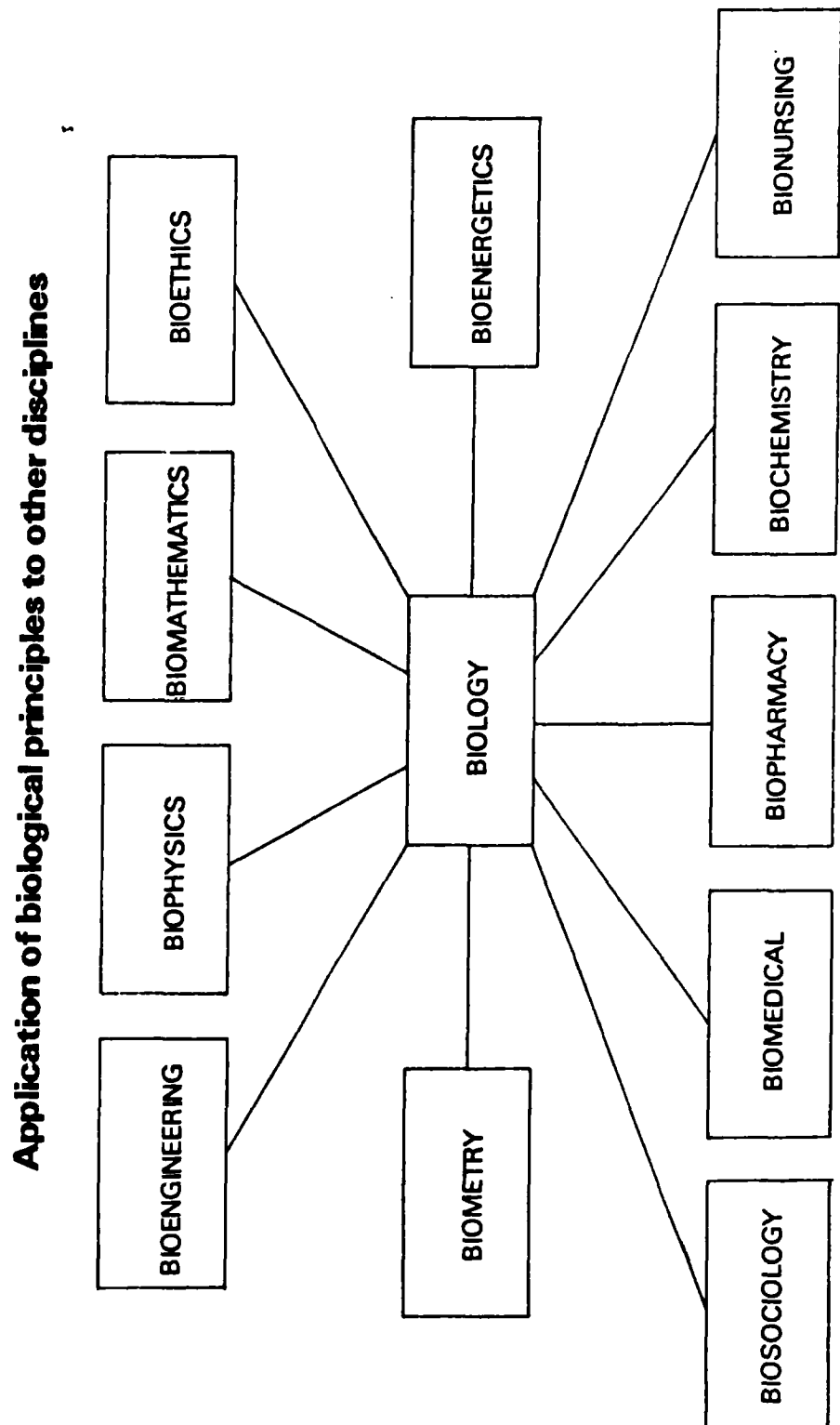
EDUCATING THE TEACHERS

HAYWARD'S MODEL 1981



Appendix 12

Application of biological principles to nursing: the concept
of 'bionursing'



Hayward & Akinsanya 1980

Appendix 13

ABBREVIATIONS USED IN THIS STUDY

'A' LEVEL	Advanced Level (see GCE)
ANTC	Area Nurse Training Committee
CERT ED	Certificate in Education
CHNT	Community Health Nurse Tutor
CNAA	Council for National Academic Awards
CSE	Certificate of Secondary Education
DES	Department of Education and Science
DNE	Director of Nurse Education
DHSS	Department of Education and Science
DIP N	Diploma in Nursing (University of London)
ENB	English National Board for Nursing, Midwifery and Health Visiting
FETC	Further Education Teachers' Certificate (City and Guild Course 730)
FWT	Field Work Teacher (Health Visiting)
GCE	General Certificate of Education
GNC	General Nursing Council for England and Wales
HV	Health Visitor
JBCNS	Joint Board of Clinical Nursing Studies
NEWP	Nurse Education Working Party
NTWP	Nurse Tutor Working Party (DHSS)
'O' LEVEL	Ordinary Level (see GCE)
RCN	Royal College of Nursing of the United Kingdom
RCNT	Registered Clinical Nurse Teacher
RHB	Regional Hospital Board
RNT	Registered Nurse Tutor
RNTC	Regional Nurse Training Committee
RGN	Registered General Nurse
RMN	Registered Mental Nurse
RNMS	Registered Nurse for Mental Subnormality
SCM	State Certified Midwife
SEN	State Enrolled Nurse
SRN	State Registered Nurse
STD	Sister-Tutor Diploma (University of London)
SPSS	Statistical Package for the Social Sciences
WNB	Welsh National Board for Nursing, Midwifery and Health Visiting
UKCC	United Kingdom Central Council for Nursing, Midwifery and Health Visiting

Appendix 14

DEFINITIONS USED IN THIS STUDY

1. Learner - a term applied to student and pupil nurses in training.
2. Life (biological) sciences - the sciences of anatomy, physiology, microbiology and pharmacology.
3. Nursing activities in practice as:
 - a) Task operational (TO) procedures - activities performed by nurses and the untrained for which a knowledge of the life sciences is useful but not formally taught to the untrained.
 - b) Task specific (TS) procedures - activities performed by nurses and sometimes by the untrained for which some knowledge of the life sciences would normally be required.
 - c) Task contextual (TC) procedures - those activities for which an appropriate knowledge of the life sciences would be required for professional practice, competence and patient's safety.
 - d) Professional and personal development (PPD) - nursing activities for which the nurse is responsible and accountable by virtue of her training and State Registration or Enrolment.

Note: Following the usual convention in literature about the nursing profession, the terms 'she and her' in the text are intended also to include 'he', 'his' and 'him'.